THE

AMERICAN JOURNAL OF PHARMACY.

NOVEMBER, 1859.

PROCEEDINGS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION—1859.

The American Pharmaceutical Association commenced its Eighth Annual Meeting at the Rooms of the Massachusetts College of Pharmacy, Temple place, Boston, on the 13th of September (Tuesday), at 3 o'clock, P. M., 1859.

In the absence of the President, the meeting was called to order by Robert Battey, of Rome, Georgia, one of the Vice Presidents.

On motion, Alfred B. Taylor, of Philadelphia, was appointed temporary Secretary.

The Chair appointed Messrs. Meakim, of New York, Melvin, of Boston, and Grahame, of Baltimore, as a Committee on Credentials.

S. S. Garrigues, Chairman of the Executive Committee, presented the following names of members elected during the recess:

M. S. McConville, Worcester Mass.
Raymond Graverend, New York City.
L. Leroy, " "
Henry Steele, " "
William Wright, Jr., " "
James H. Anderson, " "
P. Wendover Bedford, " "
Alfred J. Shipley, " "
James T. King, Middletown, N. Y.
R. H. Land, Newberry C. H., S. C.
I. F. Gross Klaus, Naverre, Ohio.
C. F. Gore Collins, Beloit, Wis.
Louis D. Lanszweert, San Francisco, Cal.
Charles Hodge, "
George S. Dickey, "
George E. Hinckley, "
Albert I. Calder, Providence, R. I.
J. Hartley Bunn, Lynchburg, Va.

On motion of Samuel M. Colcord, of Boston, it was voted to employ a reporter to assist the Recording Secretary, and the Committee of Arrangements were authorized to secure the services of a reporter at once.

Mr. Colcord announced that Mr. Kimball, proprietor of the Boston Museum, had furnished a package of tickets to that place for the use of the members of the Convention. The invitation was accepted and a vote of thanks returned.

The Committee on Credentials reported the names of gentlemen duly accredited to this annual meeting, as follows:—

From the Massachussetts College of Pharmacy:—Thomas Restieaux, William Brown, George W. Parmentier, of Boston; Charles H. Price, of Salem; Eben Blatchford, of Rockport.

New York College of Pharmacy:—H. T. Kiersted, Isaac Coddington, William Hegeman, George W. Berrian, Jr., George Thurber.

Philadelphia College of Pharmacy:—Dr. W. H. Pile, D. S. Jones, Charles Ellis, Samuel S. Bunting, Charles Bullock.

Maryland College of Pharmacy:—James Balmar, Joseph Roberts, N. H. Jennings, A. P. Sharp, I. J. Grahame.

Cincinnati College of Pharmacy:—William S. Merrill, E. S. Wayne, W. J. M. Gordon, John C. Parr, William B. Horner, (none present).

Washington Pharmaceutical Association:—Joseph W. Nairn, James N. Callan, Samuel B. Walter, Joseph B. Moore, John Schwartz.

St. Louis Pharmaceutical Association:—Enno Sander, Wm. H. Dornin, James O'Gallagher, S. D. Handel, William B. Parker, (none present).

A letter was read, stating the reasons why the St. Louis Association was not represented, when it was moved and voted that their names shall be included in the published list of Delegates.

A letter was read, from John L. Kidwell, of Georgetown, D. C., President of the Association, regretting his inability to be present.

A letter was read, from Eugene L. Massot, President of the St. Louis Pharmaceutical Association, tending a cordial invitation to the Association to hold their next meeting in that city.

A letter from William J. M. Gordon, of Cincinnati, the Secretary, gave a sufficient reason for his absence.

William A. Brewer, of Boston, read communications from the Massachusetts Historical Society; from John P. Bigelow, in

behalf of the Trustees of the City Library; and from Dr. N. B. Shurtleff, for the Trustees of the State Library, inviting the Members of the Association to visit their respective rooms. These invitations were accepted, and a vote of thanks unanimously returned for the courtesies tendered.

The Executive Committee now reported the following names of persons suitable for membership, who were recommended for election, viz.:

Thomas A. Lancaster, Philada. Pa.
Adolphus F. Neynaber, " "
A. H. Wilson, " "
Lewis T. Sillyman, Columbia, S. C.
John W. Shedden, New York,
W. Neergaard, "
Charles Pefferman, Peru, Ind.
W. J. Luck, Vincennes, "
W. F. Cleney, Cincinnati, Ohio.
John J. Cooke, Lewiston, Me.
E. T. Miller, York, Pa.
J. T. Barnett, Danville, Ky.
James Stratton, Bordentown, N. J.
Henry Q. Mack, New York City.
William H. Warner, Rome, Ga.
J. B. W. Nolin, M. D., " "
J. A. Taylor, Atalanta, "
W. A. Lansdell, " "
Robert J. Massey, M. D., Atalanta, Georgia.
B. M. Smith, M. D., "
Daniel F. White, Charlestown, Mass.
Fleming G. Grieve, Milledgeville, Georgia.
C. C. Bixby, North Bridgewater, Mass.
Orlando Tompkins, Boston, Mass.
Warren Tapley, Lynn, "
A. H. Ramsey, Cambridge, "
Isaac T. Campbell, S. Boston, "
Thomas Doliber, Boston, "
Charles Clark, " "
John T. Brown, " "
George M. Washburne, Ill.
Thomas A. Sweetzer, South Danvers, Mass.
Julius Cene, Concord, N. H.
John F. Rollins, " "
Frederick Dutcher, St. Albans, Vt.
John B. Arnold, Fitchburg, Mass.
George A. Kimball, Haverhill, "
Michael H. Gleason, Boston, "
J. Henry Zeilen, Macon, Georgia.
Henry C. Morris, St. Paul, Min.
W. S. Potts, " "
M. M. DeLevis, Chicago, Ill.
William Baker, Brunswick, Maine.
Edward H. Rollins, Concord, N. H.
Charles E. Field, Chelsea, Mass.
E. A. Morse, Rutland, Vermont.
Francis O. Bigelow, Medford, Mass.
James L. Burbank, Worcester, "
Joseph Haven Thatcher, Portsmouth, N. H.
Leopold Babo, Boston, Mass.
Chas. E. Hinckley, San Francisco, Cal.
William H. Keith, " "
James G. Steele. " "
John C. Howe, Boston, Mass.
Edward G. Frothingham, Haverhill, Mass.
H. M. Whitney, Lawrence, Mass.
Chauncey L. Case, Brandon, Vt.
Nelson R Scott, Worcester, Mass.
N. S. Harlow, Bangor, Me.
Levi G. Dodge, Boston, Mass.
Franklin K. Phillips, E. Boston, Mass.
A. G. Weeks, Boston, "
William J. Cutler, " "
E. Waldo Cutler, " "
B. F. Brown, " "
W. D. Miller, " "
Walter F. Phillips, Portland, Me.
A. R. Bailey, Cambridgeport, Mass.
Theodore S. Harris, Boston, "
George H. Chapman, " "
B. K. Bliss, Springfield, "
Nathan Dickerman, Jr., Waterbury, Ct.
John French, Boston, Mass.
Theodore Wheeler, Boston, Mass.
James Morgan, Concord, N. H.
George Moore, Great Falls, N. H.
L. L. Dutcher, St. Albans, Vt.
Edward Dana, Jr., Portland, Me.

On motion, a ballot was ordered, and Edward Parrish, H. W. Lincoln and John Meakim appointed tellers, who reported that all the votes had been cast in the affirmative, and that the gentlemen named had been duly elected members.

The Executive Committee announced that they had a list of names of parties proposed for membership, but who were not eligible under the Constitution, although they were worthy men. Some of them were manufacturing chemists, others were botanic druggists or herborists, or dealers in eclectic medicines.

Mr. Brewer, of Boston, moved to refer this list to the Executive Committee for further action.

Mr. Parrish, of Philadelphia, thought dealers in eclectic medicines were, or should be eligible, as pharmaceutists.

The Chairman remarked that this was a matter of much importance, and demanded careful attention before deciding it.

Mr. Parrish was opposed to admitting quacks, but chemists and many other useful men of practical knowledge were kept out by the Constitution.

Mr. Cummings, of Portland, Maine, was in favor of admitting all persons properly advanced in Pharmacy, but the selection from chemists, etc., should be exercised with great care.

Charles Ellis, of Philadelphia, thought the rules should be altered before admitting a new class of men to the Association.

Mr. Hollis, of Boston, thought the Society would be strengthened by scientific men.

Mr. Procter, of Philadelphia, thought that the Association should relieve the Executive Committee from the unpleasant responsibility by deciding the question, who were and who were not eligible.

The question being called, the motion of Mr. Brewer referring the names for reconsideration to the Committee, was adopted.

Mr. Colcord wished to know whether the Association had a right to inquire into the professional status of delegates from subordinate societies as to their being apothecaries, chemists, etc.

Mr. Parrish was of the opinion that no such right should be admitted; the credentials of the delegates, if genuine, should be sufficient guarantee of their character.

The calling of the roll being now in order, fifty-three gentlemen answered to their names.

Reports of Standing and Special Committees being in order, the Report of the Executive Committee, and that on the Progress of Pharmacy, were laid on the table.

The Report of the Committee "to co-operate with the Agricultural Department of the Patent Office in introducing foreign medicinal plants, &c.," being called, Mr. Wm. A. Brewer stated that he had received from the Chairman, Mr. Kidwell, a packet of papers and a package of living plants from the Agricultural Bureau. Among the papers was one from the Utah agency, in reference to certain plants used by the Indians medicinally. The papers were laid on the table for the present.

The Committee on Weights and Measures signified their readiness to report, and the Committee on the Revision of the Pharmacopœia expected to be ready when their report was called up for reading.

The Committee on Home Adulterations was prepared to report.

The Committee "on the amendment of the U. S. Law, regulating the importation of drugs and medicines," being called, Mr. Sharp, of Baltimore, stated that he had not received any information from Dr. Guthrie, Chairman of the Committee, and that he had no report.

The Corresponding Secretary, Ambrose Smith, read a letter received from E. Ringk, Vice President of the Swiss Apothecaries Association, acknowledging the reception of the "Proceedings" of last year, and sending their Journal of Pharmacy in exchange. The letter also invited an exchange of botanical specimens. In a subsequent sitting it was directed that the letter be answered, and so much of its request as relates to plants, be referred to the Philadelphia College of Pharmacy.

S. S. Garrigues, Chairman of the Executive Committee, then read the Annual Report, which was accepted.

The Report states that the Journal of Proceedings of last year contained 488 pages, and cost about $900 for an edition of 1000 copies. Many copies had been sold, each member had received a copy post-paid, and many remain on hand. The application

to Congress for a charter had failed, owing to the pressure of business at the short session.

The appointment of the Committee to nominate officers being in order, H. W. Lincoln, of Boston, Wm. Hegeman, of New York, Charles Bullock, of Philadelphia, Israel J. Grahame, of Baltimore, and J. M. Callan, of Washington, were nominated from the respective delegations, and C. A. Tufts, of New Hampshire, Edward Parrish, of Philadelphia, and A. P. Sharp, of Baltimore, appointed by the Chair from the members at large.

The meeting then adjourned to 9 o'clock to morrow morning.

Second day—Morning Session—Sept. 14*th*, 1859.

The meeting was called to order at 9 o'clock by Dr. Battey, Vice President.

E. O. Gale, of Chicago, appeared as a delegate from the Chicago College of Pharmacy, just organized in that city.

A communication was received from the Boston Library, acknowledging the receipt of a copy of the Proceedings of the Association for 1858.

The Executive Committee having nominated the following gentlemen, they were duly elected members of the Association: Messrs. Haviland, Buck and Bullock acting as tellers.

J. Lindley Pyle, Brooklyn, N. Y.	Joel S. Orne, Cambridge, Mass.
Cyrus Pyle, " "	Francis D. Hardy, Jr. " "
Uriah B. Wilson, Ann Arbor, Mich.	Wm. T. S. Cardy, Chelsea, "
Samuel P. Duffield, Detroit. "	William Atwood, Portland, Maine.
Ferd. F. Mayer, New York City,	Luther Atwood, Brooklyn, N. Y.
Joseph T. Brown, Boston, Mass.	Corydon E. Tyler, New York City.
Benjamin Proctor, Lynn, Mass.	Samuel Noyes, New Haven, Conn.
Samuel A. Smith, Newburyport, Mass.	James M. B. McNary, Hartford, Conn.
M. D. Colby, Boston, Mass.	H. H. Barrington, Providence, R. I.
George Woodbridge, " "	R. I. Taylor, Newport, "

Dr. Henry T. Cummings, of Portland, Maine, offered the following:—Voted, that the name of the American Pharmaceutical Association shall not be employed by any of the members thereof, upon signs or labels, or in advertisements, in a manner to compromise the Association in respect to its approbation or endorsement of any species of nostrums, or proprietary preparations. This was withdrawn to give place to other business.

The Committee on Nominations reported the following list of Officers for the ensuing years, viz:

For President—Samuel M. Colcord, of Boston.

1st *Vice President*—William Procter, Jr., of Philadelphia.

2d " " Joseph Roberts, of Baltimore.

3d " " Edwin O. Gale, of Chicago.

Recording Secretary—Charles Bullock, of Philadelphia.

Corresponding Secretary—William Hegeman, of New York.

Treasurer—Ashael Boyden, of Boston.

Executive Committee—Charles T. Carney, of Boston; Charles A. Tufts, of Dover, N. H.; S. S. Garrigues, of Philadelphia; George W. Berrian, Jr., New York, and Charles Bullock, of Philadelphia.

Committee on Progress of Pharmacy—Edward Parrish, of Philadelphia; Alphæus P. Sharp, of Baltimore; Eugene L. Massot, of St. Louis; James N. Callan, of Washington, D. C., and William Hegeman, of New York city.

The Report was accepted and a ballot ordered, Messrs. Haviland and Buck acting as tellers, and Samuel M. Colcord was declared to be elected unanimously.

On motion of Edward Parrish, the remaining officers were elected, *viva voce*.

On motion, a Committee of three having been appointed to conduct the President elect to the Chair, the retiring Chairman, Dr. Battey, of Rome, Georgia, addressed the Association briefly and ably on several topics of interest. He could not speak authoritatively of the progress of the Association, but the large number of members who answered to their names, yesterday, and the addition of new members, showed an increasing interest in its success.

He spoke of the necessity of securing a charter, and of having the Association represented in the next revision of the Pharmacopœia. The difficulty of deciding who shall and who shall not be admitted as members was alluded to, and the careful consideration of the subject recommended. He suggested that the Constitution might be altered so as to allow of the election of associate members from among chemists and similar professions.

The Committee, of whom the retiring Chairman was a mem-

ber, now conducted the President elect to the Chair. On taking his seat Mr. Colcord made the following remarks:

GENTLEMEN ASSOCIATES:—The honor you have conferred by electing me to preside over your deliberations, I accept with reluctance, on the score of my own personal disqualifications, though as a compliment in giving the office to Boston, and as the highest compliment from the Association to me, I value it highly, as reposing confidence in one of your oldest members, who has always been ready to offer his views for what they are worth, at a period in your history when there was no precedent to follow, and no landmarks to guide—at a period when a mistake in our organization might have proved fatal to the realization of our hopes.

Happily, those questions of a perplexing character that must necessarily arise and be settled in the first efforts of our organization, in the general plan of our operations, have been met and settled; and it must be gratifying to you, as to me, that it has been done without jar or discord, that all have been united in one common object—to promote the advancement of pharmaceutic skill and science throughout the land. To attain this end we have thrown our doors wide open to welcome all well-wishers to our profession to unite with us to receive whatever of good we may have to impart, and to do what we may for the benefit of our common cause. How different are the circumstances under which we meet to-day, our eighth anniversary, to what was our first meeting with but nine members, strangers. An imperative necessity existed for associated effort to regulate and improve our profession. We then met without confidence in ourselves, and under a still greater embarrassment of having no leaders in our labors; strangers, by reputation even, to our distant brethren, how could we look with confidence to their support, in the general apathy which all knew hung like an incubus over all ranks in our line of business.

I have said that an imperative necessity existed for such an organization, and that I can give as the only reason why we exist. All other trades and professions have their organizations for associated efforts, and as it is the general average of varied talent and ideas that make the unit nearest perfection, so we shall find it; every one has a mission to perform, as well to his

fellow as to himself. There is no one so humble in our ranks, but can add something of value to our common stock; then let us each lay aside excess of modesty as well as ostentation, and join head and heart in the work before us.

It is with these views and these feelings that I accept the office with which you have honored me—not because I feel that you have made the wisest selection, and grave doubts that you have made a judicious one—but as no one can tell his capabilities until he has made the trial, and relying upon your generous support and kind forbearance, I can only promise my best efforts for facilitating business as well as for your general comfort and happiness while you remain in Boston.

And I feel sure that while I express myself personally at your disposal, I do but express the sentiments of Massachusetts College of Pharmacy, as well as the drug trade of Boston. And I can but hope that you will consider us individually and collectively as a committee of the whole raised for your special convenience during your sojourn with us, and make use of us accordingly."

The Association now took a brief recess, and on coming to order the several officers took their assigned places. On motion of Mr. Meakim, of New York, the thanks of the Association were tendered to Dr. Robert Battey for his address, and to Mr. Taylor the Secretary pro tem. for his services.

It was decided to make the report of the Committee on Home Adulterations the first business of the afternoon session.

A Committee was appointed to take into consideration the order of business, acceptance of invitations, etc., viz:

Thomas Hollis of Boston, James Stratton of New Jersey, Samuel S. Bunting of Philadelphia.

The Report of the Committee on the Progress of Pharmacy being called up, the Chairman, William Procter, Jr., of Philadelphia, remarked that the great body of the Report consisted of a concise record of what had been discovered and written upon in Materia Medica, Chemistry inorganic and organic, Practical Pharmacy and Toxicology, with references to original papers. He then read those portions of the Report relating to the Pharmaceutical Associations, the Drug Market, Pharmaceutical Literature, and lastly a notice of the decease of eminent Pharma-

ceutists and Chemists. From the Report we learn that the schools of Pharmacy at Philadelphia, New York and Baltimore, continue in operation. That efforts at Boston to initiate a course of pharmaceutical instruction failed, owing to want of earnestness and interest on the part of students. That Cincinati College appears to be doing little to advance the profession, and that the Richmond Association has become wholly in operative. We are also informed of the inauguration of a new College of Pharmacy at Chicago, Illinois.

In reference to the Drug Market, it is stated that about 24,000 gallons of cod-liver oil are obtained annually on the coast between Boston and Eastport, Maine. That the production of New England Isinglass has lessened with the demand; that 20,000 gallons of Castor Oil, from the East Indies, were entered at the port of Boston since the 1st of January, and during the same period 50,000 bushels of Castor Beans, from the same source, imported for manufacture into oil, so as to avoid the loss by duty and leakage.

Allusion was made to the business of manufacturing chemicals, as being largely carried on at Philadelphia, and gradually spreading to other cities, as New York, Boston, Baltimore, Louisville, &c. The Committee referred to the late action of the Secretary of the Treasury in preventing the publication of the drugs imported into New York, in the Druggists' Circular, as a decided backward step, as the information thus afforded was very useful.

The Report was adopted and referred for publication.

Mr. Parrish, of Philadelphia, remarked that it was undoubtedly useful to have the reports of importations published, and it was suggested by Mr. J. D. Dix, of New York, that upon a proper representation to the Secretary of the Treasury, they could obtain authority to get the necessary information.

After some further remarks by Messrs. Parrish, Jones, Procter, Colcord and Stearns, on motion of Mr. Procter it was voted to refer this subject to a special Committee to report tomorrow. The Chair nominated Messrs. Dix, Brewer and Procter.

Mr. Parrish moved that a special Committee be appointed to act upon the subject of obtaining an Act of Incorporation from

Congress, and relieve the Executive Committee from that service.

The Chairman believed that it was proper to have an act of incorporation; so that the Association can sue and be sued; so that the Committee on Adulterations can publish names without being personally responsible.

Mr. Stratton, of Bordentown, N. J., thought if they had an act of incorporation, they would be more likely to receive donations from individuals or from Congress, in furthering the objects in view. The motion of Mr. Parrish prevailed, and the Chair stated that the Committees will be appointed at the afternoon session.

Mr. Procter, of Philadelphia, stated that various interesting specimens were on exhibition in the adjoining room, and submitted a motion for the appointment of a Committee to report on them, which was carried.

It was voted to hold a session at half past seven o'clock this evening for the reading of scientific reports, and at one o'clock the Association adjourned till three o'clock this afternoon.

Second Day—Afternoon Session.

The meeting was called to order at half past three o'clock, by the President, Mr. Colcord.

Mr. Colcord, who was Treasurer during the past year, submitted a report, showing that the cash on hand at this time is $231. The Association will have about $700 towards publishing the Proceedings of the present meeting. Messrs. Ellis, of Philadelphia, and Meakim and Haviland, of New York, were appointed by the meeting to audit the account of the Treasurer.

The Chair now appointed the following committees, viz:

Messrs. Ambrose Smith of Philadelphia, Thurber of New York, Procter of Philadelphia, and Sharp of Baltimore, to examine and report on the specimens on exhibition.

To petition Congress for an act of incorporation, James M. Callan, of Washington, E. H. Rollins, of Concord, N. H., William A. Brewer, of Boston, R. H. Stabler, of Alexandria, and John L. Kidwell, of Georgetown, D. C.

The following named gentlemen, reported by the Executive Committee, were duly elected members, viz:

Charles Pollard, of Maysville, Cal. George C. Hunt, Jr., of Fredericton,
Samuel Kidder, Jr., Lowell, Mass. New Brunswick.

The President remarked, that the last named was the first member from out of the limits of the United States.

A communication was received from D. J. Brown, Esq., of the U. S. Patent Office, suggesting that a committee be appointed to memorialize Congress for an appropriation to defray the expenses of attempting to raise medicinal plants not natives of this country. The communication was laid upon the table.

The Committee on the President's Address reported an amendment to the Constitution, so as to allow chemists to become members of the Association. The amendment lies over under the rules.

Charles T. Carney, Chairman of the Committee on Home Adulterations, then submitted a Report, which he illustrated by specimens and the results of experiments.

This Report received the warm approval of the members, and was referred for publication, as follows:

The subject placed in their hands has received, as it deserves, careful consideration.

The co-operation of our Pharmaceutical brethren from all parts of our country has been solicited, and your Committee take pleasure in stating that the interest shown by our members in this subject proves that it is a matter worthy of all the time and care bestowed upon it, from year to year, by the Association.

The matter of Adulteration is one that appeals to every person strongly. Viewed in the best light we can place it, that of a mere matter of dollars and cents, it even then meets with the condemnation of those who are only conscious of the wickedness of the practice by being touched in their most sensitive region—the pocket.

For although some do say that mixing rice flour with cream of tartar, and chicory with coffee, is a "*harmless*" sophistication, still, when they are obliged to pay the price of "Best Old Mocha," for chicory, and forty cents a pound for rice flour, *then* the enormity of the offence is at once apparent.

Before presenting to the Association such specimens of adulterations and sophistications as your Committee have to offer, it will be well, perhaps, to give an explanation as to what constitutes an adulteration. For the best definition of an adulteration, we are indebted to Dr. Hassell, of London. He says: The sale of one article in place of another is not an adulteration, but a substitution. The presence of substances in articles, in consequence of impurities contained in the materials out of which they were prepared, as, for example, arsenic in the hydrochloric acid used in the preparation of unfermented bread, does not constitute *adulteration*, they are simply impurities. Lastly, the *accidental* presence of substances in any commodity does not constitute an adulteration. Excluding, then, from the class of adulterations all cases of substitution, impurities and accidental contaminations, adulteration may be thus defined: It consists in the intentional addition to an article, for the purpose of gain, or deception, of any substance or substances, the pre-

sence of which is not acknowledged in the name under which the article is sold.

Your Committee feel that perhaps they may bring forward some facts, not in all cases agreeable, and that they may be met with the oft-repeated statement that "the public wish the adulterated articles," that "pure mustard and cream of tartar will not sell," coffee with burnt peas and apples in it is "richer," and more "nutritious," but we feel constrained to say this pretended regard for the wishes and tastes of the "public" is most generally based upon a slight interest for the pecuniary welfare of the manufacturer or trader.

The public do *not* wish adulterated articles; were they once aware of the real difference between pure and impure articles they would not hesitate a moment in their choice: could they but see the peas and beans roasted for best "old Mocha," the sulphate of soda for "cream tartar," the turmeric for "mustard," the alum for bread, and the sulphuric acid for "vinegar," your committee feel that very soon the lucrative portion of the adulterator's business would pass away, leaving him with a reputation far from enviable.

It is not only in articles of food, but in medicines, also, that this practice prevails, and your committee have felt that upon this part of the subject they should bestow a large portion of their investigations.

Science is never so noble as when engaged in advancing those arts which promote health or mitigate the sufferings of humanity, but when it is prostituted to ignoble purposes, and, in direct opposition to the relieving of suffering, is engaged in sophisticating with a cunning and well concealed hand those very articles which the physician relies upon for promoting and restoring health, then indeed it is deserving of condemnation.

Very many of the adulterations of the present day exhibit a knowledge of science worthy a better cause; many of them are decidedly pernicious, and serious results have followed their use; of such we may instance the employment of poisonous pigments for the colored confections, lead in snuff and in Cayenne pepper, copper in pickles, and cocculus indicus and nux vomica in beer and ale.

Your Committee would refer to any of the works published in France or England, devoted to the exposure of the frauds in food and medicine, for evidence, were it needed, of the great interest felt in this subject by scientific men; and they cannot better illustrate the necessity of these investigations than by giving a short list of those articles of food which have been proved to be adulterated, and the substances used for the purpose. Many of these have been met with by your Committee, and some of them are described by Doctor Hassall in his work, on "The Adulterations of Food and Medicine."

The articles we specially refer to are as follows:

Colored Confectionery—Adulterated with emerald or Scheele's green, arsenite of copper.

Beer—with cocculus indicus and nux vomica.

Pickles and Bottled Fruits—with verdigris and sulphate of copper.

Custard Powders—with chromate of lead.

Tea and snuff—with the same.

Cayenne and Curry Powder—with red oxide of lead.

Sugar Confectionery—with gamboge, orpiment, or sulphuret of arsenic, and chloride of copper.

Flour and Bread—with hydrated sulphate of lime, plaster of Paris and alum.

Vinegar—with sulphuric acid.

Sugar—with sand and plaster of Paris.

Milk—with chalk, sheeps' brains, ground turmeric.

Arrow root—with ground rice.

Chocolate—with rice flour, potato starch, gum tragacanth, cinnabar, bals. Peru, red ox. mercury, red lead, carb. of lime, and the red ochres to bring up the color.

Mustard—with ground turmeric, to give it a brilliant color.

Butter—with potato starch, mutton tallow, carbonate of lead and sugar of lead.

That it would be right to make public the persons who are directly engaged in the practice of adulteration, we feel that few would deny; but your committee refrain from pursuing this course, at present, suggesting, however, to the Association the propriety of taking some measures for exposing those who make it a regular matter of business.

It is, perhaps, our *duty* to be more explicit in this matter as to what parties are guilty of the adulterations, but your committee know that all classes of trade, manufacturer, jobber, and retailer, are sometimes implicated in these frauds.

Certain kinds of adulterations and sophistications are practised upon so large a scale as to be beyond the small dealer; they involve the use of extensive machinery which the ordinary tradesman does not possess.

It was once the practice for druggists to systematically and to all drugs certain amounts of saw-dust, oat meal, and other substances, of less value than the article in its purity, to make good the loss by drying and powdering. The average loss was considered to be about four per cent., and as this amount was added to compensate, it was known as the "four per cent. system." The practice, under this name, was principally confined to England, but from specimens with which your committee have, from time to time, met, it is apparent that a practice somewhat similar exists, occasionally, on this side the water.

Your committee feel also that the tradesman is sometimes a party to the fraud, although he may not be the actual mixer. He often purchases of the wholesale dealer an article which he knows cannot be pure, from the price asked; he is willing, however, to stretch his elastic conscience round the apparent discrepancy, and as one of the members of your committee has been told by a retail apothecary, if the jobber told him an article *was* pure, although *he* knew it was not, he should consider the jobber as having taken the responsibility, and should buy and sell the article with a clear conscience.

Your committee do not appreciate this kind of a conscience, and trust our profession is not graced with many such. It is our duty as pharmaceutists to do all in our power to put an end to this pernicious system of adulteration, using our influence against a practice which, in the language of another, "is undermining the very foundation of trade, namely, *faith in commercial integrity.*"

In England the matter of pecuniary loss to the government has been taken into consideration, and from careful estimates the revenue suffers by adulteration to the extent of two millions annually! The author of "Food of London" states that half the national revenue is derived from articles of consumption. "If the government loses so much, the public suffers a much greater loss."

This subject of home adulteration, then, is one worthy of attention by state and public officers, even as a question of pecuniary moment only.

As a matter relating to public health, this subject is worthy careful attention; very many of the adulterations practised upon food and medicine are said to be "harmless in themselves;" but we have seen that in a pecuniary point of view at least they are not so. Very many instances are on record, however, where not only serious but fatal results to health have followed the use of adulterated articles.

During the past year your committee have met with very many instances of fraud and deception in drugs; some of these are very curious, and are worthy of a place in a report of this kind.

During the past year, in a wood-turner's shop in Boston, was seen more than a barrel of East India rhubarb, which was being turned down into "true Turkey."

This rhubarb was sold for genuine and real Turkey rhubarb.

A druggist was applied to by a man for a situation as porter in his store: "What can you do? What have you been doing at your last place," were the questions asked.

"Oh," replied the man, "I have done every thing about the store that was needed, until the past year. I have worked up stairs in the *room* making Turkey Rhubarb."

"Making Turkey Rhubarb; what do you mean by that?"

"Why," replied the man, "we used to take the East India and *file* it and *bore* it into true Turkey."

The man was not engaged.

Both of these, it may be remarked, are merely instances grateful to those who urge that "*most* of the adulterations are *harmless*," but they must appeal with considerable force to those who are sensitive as to the mere value of an article in dollars and cents, for East India Rhubarb at 90c. per lb., transformed into "true Turkey" at $4 50 per lb., is certainly a touching instance of the mutability of earthly things, especially drugs.

There is one more aspect in which this subject of adulterations is to be considered, and that is the moral bearings of the practice. It is not possible for an adulterator to be a strictly honest man. The practice not only makes those guilty of it dishonest, but it also causes distrust on the part of those who buy; confidence in the integrity of the seller is lost by those who purchase, and not only do the guilty, but the honest traders suffer: in fact the standard of morality and business integrity is lowered, and the innocent suffer with the guilty.

The truly upright man who cannot conscientiously adopt the practice of his competitors, how fares it with him?

He struggles alone, selling pure articles at a smaller profit than those who are less scrupulous he, is discouraged, and well he may be oftentimes; and were it not for the proud consciousness of right doing, he would become disheartened, less honest, and finally adopt the practices he formerly condemned.

The practice of adulteration, then, is one deserving condemnation, because prejudicial to public health, honesty and morality, and in a pecuniary view, as occasioning a loss to the public and the government.

If we admit the truth of the statement of Dr. Normandy, and very few will question it, we can see to how great an extent the practice has advanced. He says: "Adulteration is a wide-spread evil, which has invaded every branch of commerce. *Everything* which can be mixed or adulterated, or debased in any way, is debased."

Your committee submit herewith a brief list of drugs found to be adulterated, and the articles used for the purpose.

Many of the substances referred to in this list are taken from "Chevalier's Dictionary of Alterations and Falsifications."

Acetate of Morphia, is adulterated with acetate and phosphate of lime.

Benzoic acid, with asbestos, carbonate and sulphate of lime, hippuric acid and sugar.

Citric acid, with oxalic and tartaric acids, and sulphate of lime. It often contains sulphuric acid and salts of lead or copper. In 1850 M. Pennes discovered the presence of lead in this acid, obtained of three highly res-

pectable dealers. The acid was very white, and was intended to prepare the purgative lemonade.

Tartaric acid, with cream of tartar, acid sulphate of potassa and with lime.

Aloes, with colophony, ochre, extract of licorice, gum arabic, and calcined bones.

Starch, with carbonate and sulphate of lime or alabaster; the more common fraud is, however, to saturate it with moisture.

Arrow root, with potato starch, and rice flour.

Assafœtida, with gum resins of poorer quality, with sand, and other hard substances.

Balsam Copaiva, with the resinous extract by decoction of the bark and branches of copaiba trees, turpentine, colophony, and fat oils.

Balsam Peru, with colophony, turpentine, benzoin resin, alcohol, and fixed oils.

Balsam Tolu, with turpentine, colophony, and other resins.

Chloroform, with chlorhydric ether, hypochlorous acid, hydro-carbonated oils, compounds of methyle and aldehyde, and fixed substances.

Beeswax, with resin, burgundy pitch, earthy matter, flowers of sulphur, starch and amylaceous substances, tallow, stearic acid, yellow ochre, calcined bones and sawdust.

Tart. Emetic, with cream tartar, oxide of antimony, tartrate of iron, chlor: calcium and potassium, and sometimes is contaminated with salts of copper and tin.

Essential oils, with alcohol and fixed oils.

Iodide Potassium with chloride potassium and sodium, and calcium, carbonate of potassa and *bromide* of potassium. The latter salt being sometimes in so large a proportion, owing to its lesser price, as to *replace*, almost entirely, the iodide.

Manna, with glucose, or starch sugar and starch. The large flake manna is sometimes made from a mixture, consisting of a little manna, flour, honey and a purgative powder; these are boiled together to a syrupy consistence, and then moulded in form of "flakes;" common "sorts manna" has been converted into "flake" by being boiled in water, clarified with charcoal, and moulded into proper form.

It is possible to extend this list, but your committee feel that enough has been already brought forward to establish the fact, were proof necessary, that very many articles depended upon as medicines to restore health, may be, *because adulterated*, highly pernicious and even fatal in their effects.

Your committee propose to offer, in concluding this report, already perhaps extended beyond its limits, a few specimens of adulterations and substitutions which have come to their knowledge the past year, and to give the simpler tests by which they may be detected.

First we ask your attention to the

SUBSTITUTIONS.

Specimen No. 1 is Western Alcohol. A barrel of this was sold for "Atwood's Alcohol." A very simple examination proves it to be loaded with grain oils, and thus exposes the fraud at once. The simplest way to detect the grain oils is to treat the suspected sample with an equal volume of concentrated sulphuric acid; if grain oils are present, the mixture becomes darker colored, owing to their carbonization. Also they may be detected by solution of nitrate of silver; expose the alcohol, to which this solution has been added, to the action of sunlight, or diffuse daylight—if grain oils are present, a black precipitate subsides after some little time. This change does not occur if the alcohol is pure.

Specimen No. 2, is an Oil, principally Linseed, which was sold for true "English oil of sweet almonds." The physical characteristics and the temperature required for congelation, serve to detect this fraud. Linseed oil remains fluid at zero, while true oil, almonds congeals above that temperature.

Specimen No. 3 is false Oil of Bitter Almonds. This was purchased with the label of a well known English house upon it, and was sold as "true essential Oil of Bitter Almonds." It is the article known as "Essence de Mirban," or Nitro-Benzole, and may be detected very easily.

When a mixture of 1 volume *true* essential oil almonds, 2 volumes of alcohol, and 1 volume of very weak solution of potassa, mixed well together, is allowed to stand, it is converted into benzoic acid in from 24 to 48 hours.

The fictitious oil (nitro benzole) is not capable of undergoing this change.

Specimen No. 4, is fictitious Tapioca. This article purports to be the fecula of Jatropha manihot, or cassava. It is not, however, what it appears, and is proved to be, by microscopical examination, entirely a fictitious article, made from potato starch, and does not contain one particle of real Tapioca. This article is made in Liverpool England, and imported into New York.

Your committee cannot refrain from recommending the use of the microscope as being a very valuable aid to the Pharmaceutist. By this instrument is he enabled to detect at once, frauds which perhaps might be previously unsuspected, particularly in articles of food, as in the instance just brought to your notice.

Specimen No. 5 is Melambo or Matias Bark.—This bark is largely used for grinding with all kinds of spices. For a further description, we refer to Prof. Procter's Journal of Pharmacy, vol. 29th, pp. 103 and 215. where the nature and characteristics of this bark are very fully set forth by Messrs. Edward Parrish and Frank B. Dancy. Your committee are not aware of *other* uses, to any extent, to which this bark is put, *except for adulterating spices.*

The next articles to be considered are

ADULTERATIONS.

Specimen No. 1.—This is an adulterated article of cubebs with the false berry used for the purpose. These cubebs were purchased as a select and superior article; the fraud existing in them was not discovered for some time. The false berry is readily distinguished, however, as it is bi-lobed, while the cubeb is a single lobed berry. There exists in the lot of cubebs from which these were taken 15 per cent. of false berries *by weight;* they are heavier than the cubebs, and are, on that account, easily added in sufficient amount to vitiate the quality of the drug without attracting notice.—Your committee have endeavored without success to ascertain the name of this false berry; it appears to be inert and worthless, not possessed of any deleterious property other than that of reducing the strength of the powdered cubebs, which, in the amount present in sample under consideration, it does quite perceptibly.

Specimen No. 2 is French Lycopodium, which is adulterated with the starch of some species of lentil, apparently. The microscope reveals this adulteration at once, which otherwise might not be suspected. If treated with water and solution of iodine, the presence of starch may also be detected. This drug is often adulterated with starch, pulv. gypsum, and even box-wood powder. By separating with water the heavier adulterations, they can be examined and recognized, the wood powder can be separated by means of a sieve.

The specimen under examination is part of a lot purchased in one pound

bottles, with a French stamp and label upon it. A portion of it having accidentally been wet, the starch became "musty," revealing its presence, otherwise unsuspected. Subsequent examination, as above, furnished further proofs of its existence.

Specimen No. 3 is Para Balsam Copaiva.—This contains from 6 to 8 per cent. of heavy or fat oil.

Balsam copaiva is very largely adulterated. It often contains the resinous extract by decoction of the branches and bark of the Copaifera, turpentine, colophony and fat oils, particularly castor oil. The balsam adulterated with turpentine is not of so heavy consistence as the true balsam; it is more viscid and sticks upon the sides of the bottles holding it. It may be easily proved whether turpentine is present or not, by simply heating a drop of the suspected balsam upon a sheet of glazed paper over a spirit lamp; the oil of copaiva is first volatilized, and the odor of the turpentine is at once apparent.

Castor oil is the most dangerous adulterative, owing to the great similarity between that and true balsam. This may be detected by mixing three parts of the suspected balsam with one part sulphuric acid, and shaking with 15 or 20 parts of alcohol of 36 deg. If the mixture separates, it indicates that the balsam is adulterated with castor: when pure there is no separation. This test will detect not less than 1-9th part of adulteration.

The presence of castor oil may also be detected by adding 2 parts ammonia 22 deg. Beaume, to 5 parts suspected balsam, and shaking them together in a stopped bottle. The mixture becomes viscid and "ropy," but very soon clears itself and becomes transparent, if pure.

It is whitened by agitation on the contrary, if it contains Castor oil. The only precaution to be taken, however, is that the temperature of the mixture should be from 50 to 60 deg. Fah.; above or below this point the result is inaccurate, as, from 68 to 76 deg. Fah. the mixture is transparent whether pure or adulterated, and at 32 to 40 deg. Fah. the *pure* Balsam remains clouded.

The Fixed Oils may be discovered by heating a drop or two of the balsam upon paper. If the balsam is pure, the volatile oil is driven off, leaving the resin homogeneous, transparent, and brittle; if it contains heavy or fixed oil, the resin is surrounded by a greasy aureole and is less brittle.

Finally, Balsam Copaiva is "made up" of the fat oils, as poppy and rape seed, with turpentine. These mixtures, however, would deceive only the inexperienced; in all cases ethereal alcohol (4 parts alcohol, 1 part ether) serves to recognise this fraud, this liquid dissolving only the true balsam, leaving the foreign matters.

Specimen No. 4 is Powdered Opium. This is a very poor specimen of powdered opium. It was sold at a high price to a person not perfectly familiar with drugs, but to him it appeared so different from his idea of the article, that he requested an examination of it. It is found to contain less than 3 per cent of impure morphia, which is but one-third or one-fourth the amount considered to be the standard yield by the United States Dispensary. It is evident that this powder of opium could scarcely fail to disappoint the expectations of the physician. What article is used for adulterating this, your Committee have not decided. It is possible that the opium was exhausted in part, before drying and powdering.

Specimen No. 5 is Balsam of Tolu containing 16 per cent. common resin. Balsam of tolu is often adulterated with turpentine and various resins. It is easy to detect this fraud by the peculiar resinous odor which the adulterated article gives off when burnt. It may also be distinguished by testing with sulphuric acid. The concentrated acid added to the pure balsam gives a cherry red liquor without disengagement of sulphurous acid; the same acid

added to balsam adulterated with resin, gives a blackish brown liquor with abundant disengagement of sulphurous acid.

Specimen No. 6 is Powdered Tartar Emetic.—This is largely contamina ted with foreign bodies, containing as much as 21 per cent. of impurity.- The impurity in it is doubtless owing to careless manufacturing, and as this article in powder is often made without proper and sufficient care being used in its manufacture, it is best for the pharmacentist to buy none but the crystals, and being assured of their purity, powder them himself.

The impurities most generally present in tartar emetic, are uncombined cream of tartar, chloride of calcium, or potassium, and sulphate of potassa. It also sometimes contains, as accidental contaminations, iron and tin. The uncombined cream of tartar may be detected by an acid solution of acetate of lead; the solution is made of 32 parts distilled water, 8 parts cryst. acetate of lead, and 15 parts acetic acid of 9 deg. The presence of cream of tartar is shown by the white precipitate produced in a solution of tart. emetic on adding a small portion of the lead reagent.

Chlorides of potassium or sodium, or chlorhydric acid may be detected by their affording a white "curdy" precipitate upon adding to a solution of tart. emetic a few drops solution nitrate of silver. This white precipitate, if *chloride of silver*, should be entirely soluble in ammonia.

This specimen under examination contains 8 per cent. of chlorides. Sulphate of potassa may be detected by the white precipitate, insoluble in nitric acid, which is afforded by solution of chloride of barium or nitrate of baryta.

The specimen under examination contains 13 per cent. of sulphates.

Specimen No. 7 is Cream of Tartar.—This article is one used largely both as a medicine and in the preparation of food; it is worthy of careful consideration, and your Committee have given considerable attention to it.

Cream of Tartar is very largely adulterated. Some of the articles used for the purpose are in one sense harmless; that is, not injurious to health, but many of them are decidedly pernicious, and *all* of them are to be condemned because sold to deceive the community and enrich the adulterator.

Cream of tartar is adulterated with tartrate of lime, chalk, finely powdered white marble, sulphate of lime, sand, nitrate of potassa, alum, sulphate of soda and potassa, chloride of potassium. It has been found to contain, as impurities, iron, copper, lead and arsenic.

The addition of starch, arrow root and other amylaceous substances is well known, and the specimen under examination is only remarkable from the fact that it contains 63.33 per cent. of farinaceous substances as adulteration.

This was sold as *pure* cream of tartar. The easiest way to detect the adulteration with starch of farinaceous substances, is by testing a cold solution of the cream of tartar with solution of iodine. The characteristic blue "iodine of starch" will at once be apparent.

If we treat the cream of tartar with boiling water we dissolve all soluble substances, leaving behind the tartrate of lime, quartz, clay, sand, sulphate of lime, and other insoluble impurities.

Chalk or white marble may be discovered by the effervescence produced by the addition of a weak acid, as chlorhydric, or nitric.

Alum and sulphates of potassa or soda are shown to be present by the white precipitate, insoluble in nitric acid, produced by solution of chloride of barium; if a precipitate is produced in the same solution by oxalate of ammonia, we know that lime is also present. Chloride of potassium is shown, by the white "curdy" precipitate, entirely soluble in ammonia, formed by adding solution of nitrate of silver to the cream of tartar solution.

The iron, lead, and copper come from the vessels of these metals, in which he cream of tartar is purified.

The solution of cream of tartar, tested with tincture of galls, takes a *black* color if iron is present; with ammonia, a *blue* color if copper be present; with iodide potassium, a *yellow*, if lead is present.

The presence of arsenic in cream of tartar, according to Dr. Bley, comes from the arsenical sulphur used in the "mutage," or process for arresting fermentation in the "must" of grapes, which consists of burning sulphur in the casks, thereby liberating sulphurous acid. The arsenic may be detected by Marsh's apparatus.

Specimen No. 8 is Acid Sulphate of Soda.—This is the residue from nitric acid manufacturing. The nitrate of soda or Chili saltpetre is decomposed by sulphuric acid, and this article remains. It is largely used to adulterate cream of tartar and this

Specimen No. 9, is one which contains this adulteration. This acid sulphate may be considered one of the injurious adulterations.

There is one drawback to its use, however, as a substitute for cream of tartar, and that is its deliquescence, or property of taking moisture from the atmosphere. It was once attempted to substitute it for cream of tartar in a "Yeast Powder," but after having been put up, the article was obliged to be withdrawn from the market because it destroyed the cans. Query?—Will the human stomach bear it better than a tin can?

Specimen No. 10 is the "great adulterator." This article, known by the above name, is selenite or sulphate of lime. It is imported into New York, and there powdered for use.

Specimen No. 11 is the "great adulterator" in its natural state, before being powdered.

Specimen No. 12 is cream of tartar, which is adulterated with the "great adulterator;" as this substance is almost insoluble, any one can judge of the benefit to health that might arise from a long continued use of the article in the daily food.

The specimen of cream of tartar under examination contains 25 per cent. of the "great adulterator."

Specimen No. 13 is a fatty residue from oil of lemon. This was obtained from a sample of oil of lemon of suspected purity, the last winter, and amounted to 22 per cent. of the whole weight of oil. In cold weather it has a butyraceous consistence, but as it now appears is more fluid.

It is somewhat unusual to find an article of oil lemon adulterated in this way; and your Committee would call the attention of pharmaceutists to this fact as being evidence of a new practice in the way of fraud in this article.

Specimen No. 14 is capsicum with adulteration of common salt. This can be detected by exhausting the pepper with water, evaporating to dryness and testing the residue by nitrate of silver for chlorine; the soda imparts its characteristic color of yellow to flame of burning alcohol.

Corrosive sublimate sent from Kentucky was proved to be adulterated with chloride of sodium (common salt) by the usual tests. The sample was too small to estimate the amount of impurity present, and we cannot show a specimen of it because it was all consumed in examination.

Specimen No. 15. Lunar Caustic. This was sent from Kentucky also, having been purchased in New York at a cost of $1 20 per oz as a *pure* article. A great imposition was practised either by the seller or the manufacturer. Upon a careful examination it yielded only 14 per cent. of chloride of silver, equivalent to about 10 per cent. of metallic silver. Had it been pure nitrate, it should have yielded 64 per cent. of metallic silver.

Specimen No. 16 Piperine. Adulterated with yellow prussiate of potassa. This fraud can be easily detected by testing a solution of the

suspected Piperine with a per-salt of iron. The blue reaction is instantly produced, caused by formation of ferro-cyanide of iron.

This reaction taking place while combining a recipe in which the Piperine and a salt of iron was ordered, led to the detection of the fraud, otherwise unsuspected.

Flowers or Oxide of Zinc. All specimens examined, except some German proved to be merely the carbonate.

Specimen No. 17. Oil of Bergamot. A lot of oil of bergamot, purchased, at the market rates, and to all appearance a very fine article, proved to contain 30 per cent. of alcohol, by the usual test of the graduated tube and treatment with water.

Specimen No. 18. Oil of Wormwood. As regards smell and taste, this oil is unexceptionable. Its specific gravity is so low as to excite suspicion, and it proves to be adulterated with ether upon a careful examination.

This fraud can be easily detected by the low boiling point and specific gravity.

One of the members of your Committee, who is acquainted with a gentleman formerly in the drug grinding business in New York, has been kindly furnished by him with some formulas by which "pure and genuine drugs" were prepared when he was employed at the mill referred to:

Powdered Cape Aloes—Cape aloes dried, 100 lbs.; ship biscuit, 100 lbs.; curcuma q. s. to color.

Common Ginger—African ginger, 200 lbs.; capsicum hulls, 25 lbs.; biscuit, 100 lbs.; curcuma q. s. to color.

Ipecac. powdered—Ipecac., 100 lbs.; ship biscuit, 25 to 40 lbs.

Opium powdered—Turkey opium, 50 lbs.; Egyptian opium, 25 lbs.; biscuit, 40 lbs.

Gamboge powdered—Gamboge, 100 lbs.; tartrate of lime, 25 lbs.

Socotrine Aloes are pure bonaire, without adulteration.

Cream of Tartar is adulterated with from 10 to 65 per cent. of terra alba, or tartrate of lime, with about 3 per cent. tartaric acid.

Tartaric Acid powdered—Tartaric acid, 1000 lbs.; alum, from 10 to 35 per cent.

Scammony Aleppo, powdered—Virgin Scammony, 30 lbs.; cocoa beans, 80 lbs.; biscuit, 30 lbs.; lampblack, q. s. (sufficient quantity) to color.

Bird Pepper, powdered—Chilies, 1000 lbs.; rice, 800 to 1200 lbs.; curcuma and Venetian red to color.

Powdered Fenugreek—Fenugreek seeds, 1000 lbs.; biscuit, 1000 lbs.; curcuma q. s. to color.

East India Rhubarb, Powdered—East India rhubarb, 100 lbs.; English do., 60 lbs.

English Rhubarb, Powdered—English rhubarb, 100 lbs.; biscuit, 30 lbs.; curcuma to color.

Turkey Rhubarb, powdered—East India rhubarb, Turkey rhubarb, equal parts.

The tartrate of lime referred to is more properly sulphate of lime with a small portion of tartrate. The ship biscuit is the hard and often worm-eaten cakes brought in by ships after a long voyage.

Your Committee have noticed, in making a number of examinations of articles furnished by manufacturers, as acetic, nitric, muriatic acids, aqua ammonia, oxide of zinc, sub-carbonate of iron, and others, that but little attention is paid to the requirements of the Pharmacopœia, as every pharmaceutist can ascertain with but little trouble.

We think it important, and would suggest to this Association the propriety of calling special attention to this point; that while we *have* a standard, our

manufactures should furnish articles that can be depended upon for purity and for officinal strength.

In conclusion, your Committee express the hope that the effort made by them to awaken more of an interest in the subject of adulterations may meet with favorable support from this Association.

We feel that we have barely touched upon the subject; very many instances of fraud and deception are not alluded to; but what we have said and done we trust may be for the benefit of the public and of our profession at large. We cannot take leave of the subject, however, without expressing the satisfaction we feel as we refer to very many members of our profession who strive to raise the standard of their business by discountenancing in every way in their power all fraud and deception.

The stigma of adulteration does not belong to the drug trade alone; in fact, very many articles of food are systematically and almost always adulterated, so that to obtain them in their absolute purity is almost the exception. Of such are the ground spices, coffees. &c.

We are aware this is a strong assertion, but proof can be produced were it necessary.

One article referred to, that of ground coffee, we can give the formula by which it is made.

This coffee put up in 1 lb. papers, and labelled "fine old Java," is made as follows: for every 100 pounds there are 60 pounds of peas, 20 pounds of chicory and 20 pounds of coffee.

This compound sells for 12½ cents per pound, and any person can judge of the value of it as coffee, containing as it does but 20 per cent. of that substance.

There are many upright and honorable men, however, who discountenance any such imposition upon the public, in all branches of trade, and we feel a proud satisfaction in referring to them, whether members of our profession or not; in *our own ranks* we know there are many on whom the public can rely, and in closing we can only urge upon this Association, once more, the importance of this subject, earnestly soliciting the hearty co-operation of every member to raise the standard of our profession, and as far as possible to discourage and expose fraud and deception.

CHARLES T. CARNEY, A. P. SHARP,
EDWARD R. SQUIBB, A. B. TAYLOR,
On behalf of the Committee.

On motion of Mr. Parrish, Dr. Charles T. Jackson, who was present, was invited to take a seat in the Convention and participate in its discussions.

Dr. Jackson thanked the Association for the courtesy. He complimented the Report on Adulterations and corroborated many of its statements from his own experience, giving several anecdotes bearing on the subject at some length. He disparaged the Drug Law as not accomplishing the object intended, as it substituted the imperfect examinations of the Custom House for the regular analysis of the practical laboratory.

The subject was continued by Messrs. Dix, Brewer and Hollis, after which, on motion of Mr. Procter, the thanks of the Association were tendered to Dr. Jackson, for the remarks with which he had favored the meeting.

An invitation to hold the next meeting of the Association in New York, and another to hold it at Columbia, S. C., were received.

Charles Ellis, of Philadelphia, laid before the Association a specimen of the new resin of Scammony, made by McAndrew & Sons from the root of Convolvulus scammonia, by means of alcohol, and some explanatory information in relation to its history was given by Messrs. Dix, Squibb, Procter, Parrish and Fish.

Mr. Dix subsequently presented to the Association a quantity of this new resin of scammony, and requested members who had facilities to do so, to have it tried and compared with the best scammony, and report the results.

An invitation was received from Mr. Cutting, of the Aquarial Garden, to visit that Exhibition, and the thanks of the Association were tendered therefor.

At six o'clock the meeting adjourned till half past seven, P. M.

Evening Session.

This Session being devoted to the reading of scientific reports and papers, the specimens of living plants sent from the Department of the Interior, at Washington, were placed on the table. Among them were the camphor tree, the cork oak (Quercus suber), green and black tea plant, the Rhus succedanea, from Japan, which affords the Japanese wax, the soap plant (Corchoris olitorius), and the wild chamomile (Pyrethrum Caucasium) from Russia.

On coming to order, at half past seven o'clock, the President appointed the following committee to prepare a list of subjects to be reported on next year:—William Procter, Jr., Frederick Stearns, Charles T. Carney and Israel J. Grahame.

Edwin O. Gale, of Chicago, read the first paper on the thirty-ninth question, "What are the characters of the resinous exudation of the Rosin weed (Silphium laciniatum) of the Western prairies? can it be substituted for mastic, and to what extent may it be collected as an article of commerce?" Mr. Gale thinks it can be substituted for mastic in chewing; he finds it to make a good varnish; that it is a cure for the heaves in horses, and allays irritation of the lungs. Although the prairies

abound with it, it is tedious to collect, and at present must be an expensive article of commerce.

Joseph Roberts, of Baltimore, read a paper, in answer to question No. 2 of last year, on Wine of Ipecacuanha, as regards its tendency to deposit sediment, and considered that this sediment does not effect the medicinal power of that preparation.

Edward Parrish, of Philadelphia, read a paper "on the deterioration of Pharmaceutical preparations by keeping, the causes of injury and the means of preventing it," in answer to question No. 40 of last year.

No answers were received to the following:

No. 3. Relative to coating pills, accepted by John Canavan, of New York.

No. 5. Relative to Prickly Ash Bark, accepted by William S. Merrill, of Cincinnati.

No. 6. On the relative solvent power of water, alcohol and ether, accepted by Dr. Henry Thayer, of Cambridge, Mass.

No. 7. On the iridescence of Oil of Bitter Almonds, accepted by Abraham S. Wiley, of Cambridge, Mass.

No. 8. On the best tests of adulterations in Wines and Liquors, accepted by Geo. W. Weyman, of Pittsburg.

Charles A. Heinitsh, of Lancaster, gave an explanation why the subject referred to him, No. 9 on Chrome Ores, had not been answered, which was satisfactory.

No. 10. Relative to Denarcotizing Opium, referred to Eugene L. Massot, of St. Louis, was not answered.

James O'Gallagher, of St. Louis, sent a paper, in answer to the 11th subject, "A synopsis of the History of Pharmacy," which was read by Samuel S. Garrigues.

No answers were received to the following:

No. 12. Production of Castor Oil in Porto Rico, accepted by Edward L. Milhau, of New York.

No. 13. The Cacao-nut (Theobroma cacao) its history, culture and products, accepted by Edward Donnelly, M. D., of Philadelphia.

No. 14. The best form of Press and Pressing Box, for the Pharmaceutical Laboratory.

No. 15. The best form for a still of 2 to 4 gallons capacity, for the Pharmaceutical Laboratory.

The two last questions were accepted by Dr. E. R. Squibb. Owing to the destruction of his laboratory, and the attendant circumstances with which the members are familiar, Dr. Squibb could not prepare answers to these questions; but as a substitute for them, he read a paper on the "Mechanical Preparations of Mercury with a mercurial machine," which he illustrated, with a diagram. This paper excited considerable interest, from the perfection of the results it affords.

At 9¾ o'clock the Association adjourned to 9 o'clock on Thursday morning.

Third day—Morning Session—Sept. 15th, 1859.

The President called the meeting to order about 9 o'clock, and the Minutes of yesterday were read by the Secretary and corrected.

Mr. Tufts, of Dover, N. H., announced the death of Mr. S. P. Peck, late of Bennington, Vermont, formerly a Vice-President of the Association, and introduced resolutions appropriate to the occasion.

The Executive Committee reported that Bradford Ritter, of Philadelphia, had sent in his resignation, and had paid his dues and returned his certificate of membership.

On motion of Samuel S. Garrigues, the resignation of Mr. Ritter was accepted.

The subject of "Resignation" coming up, a resolution was adopted authorizing the Treasurer to accept the resignation of any member upon payment of dues and return of certificate, after the matter had been discussed by Mr. Colcord, Dr. Squibb, and others.

The Report of the Committee on Weights and Measures being now in order, Alfred B. Taylor, Chairman, read the Report. This document is very comprehensive in its scope, and is written with much ability. It discusses the relative merit of the different metrical systems that have been proposed, and especially the Decimal System, which is not favorably received. The advantages of the decimal system of notation for calculation is admitted, but the difficulty attending binary division in this system renders it very inconvenient in practice. Mr. Taylor, whilst acknowledging the impracticable character

of reforms involving the habits of larger masses of people, in different countries, is of the opinion, that the *Octaval System* of enumeration, in which 64 takes the place of 100 in the decimal system, and which he elucidates fully in his paper, possesses elements that fit it better for all purposes than any other, were it once adopted in practice. The paper was referred to the Executive Committee to print in full, and they were authorized to print some extra copies in pamphlet form.

On motion, it was resolved, that when the meeting adjourned, it would adjourn at 2 o'clock, P. M., to meet at 3½ o'clock, P. M.

The Report on the Pharmacopœia being called up, the Chairman, Edward Parrish, read such parts of the document as were interesting to the Association. The Committee deprecate the introduction of changes not absolutely necessary, and think that no drug should have a place in the list till it has gained a general reputation. The paper was referred to the Executive Committee, with instructions to publish at their discretion.

Some discussion now arose upon the question, whether a report would be received by the Pharmacopœia Convention of 1860, from the American Pharmaceutical Association, in view of the fact that it was not incorporated.

Mr. Parrish had doubts of the expediency of publishing the Report, as one copy laid on the table of the Revisory Committee would be sufficient for all practical purposes. Dr. Squibb, Mr. Carney and others, took the opposite view, and the discussion was continued at some length; the reference, as above noted, was finally acquiesced in.

The Association then proceeded to consider the question of the locality of the next Annual Meeting.

Dr. Battey, without urging strongly the propriety of meeting at the South next year, was of the opinion that, in case it was determined to meet there, Atalanta, Georgia, was geographically the best location, in view of accessibility from all points of the Southern States. Although a new town, without a pharmaceutical organization, he felt authorized in pledging the support of the pharmaceutists of Georgia to the enterprise.

Dr. Squibb advocated New York, Mr. Callan presented the claims of St. Louis, and Mr. Ellis those of Columbia, S. C.

Pending the question, the meeting adjourned to 3 o'clock, P. M.

The Association again met at 4 o'clock, P. M.

Afternoon Session.

The following named gentlemen being duly recommended by the Executive Committee, were elected to membership, viz.:

James Emerton, Salem,	Mass.	Rufus W. Stevens, Great Falls,	N. H.
William H. Ware, Gloucester,	"	A. H. Dana, Providence,	R. I.
James A. Gleason, Boston,	"	B. F. Johnson, Philadelphia,	Pa.
Samuel H. Woods, "	"	Lewis Dohme, Baltimore,	Md.
Henry Warren, "	"		

William A. Brewer, of Boston, in behalf of Mr. Kidwell, Chairman of the Committee appointed to co-operate with the agricultural department of the Patent Office in the introduction of foreign medicinal plants, presented a report covering a voluminous correspondence with various public officers and government agents, accompanied by the specimens of living plants before referred to, which was read and referred to the Executive Committee.

The following named gentlemen were appointed by the President as a Committee on Home Adulterations for the coming year:—Charles T. Carney, of Boston, Chairman; I. J. Grahame, of Baltimore; Charles Bullock, of Philadelphia; A. P. Sharp, of Baltimore; Dr. E. R. Squibb, of New York, and Edward S. Wayne of Cincinnati.

The reading of answers to queries proposed last year being again resumed,

Frederick Hale, of New York, read an interesting essay in reply to No. 16, "On fitting up Drug Stores in reference to convenience and good taste."

Ambrose Smith, of Philadelphia, read a paper in answer to No. 17 of last year, on oxide of silver in its relation to extemporaneous pharmacy.

William Procter, Jr., presented a reply to query No. 18, "What is the most eligible process for preparing polygalic acid from senega, in what proportion does it exist, and what are the forms of prescribing it as a substitute for the preparations of seneka.

Israel J. Grahame read an answer to question No. 1 of last

year, relative to the preservation of narcotic and other extracts.

No answers were received to the following questions:

No. 19, on the bark of Larix americana, referred to Dr. H. T. Cummings of Portland, Me.

No. 20, the History and Statistics of New England Carrageen Moss, accepted by Augustus P. Melzar of Boston.

No. 22, on the influence of alkalies on the alkaloids of Belladonna and Hyoscyamus, accepted by R. H. Stabler of Alexandria.

No. 23, Statistics and manufacture of fine chemicals in England for the American market, accepted by Henry Haviland of New York.

No. 24, the Drug Trade of the United States—its past, present and future, accepted by C. B. Guthrie, M. D., of New York.

Mr. Garrigues replied to No. 21, relative to the culture of Crocus sativus in the United States, that Frederick L. John, to whom it was referred, had made the inquiries necessary to elicit the information required, but was informed by the parties in Montgomery County, Pennsylvania, who had formerly cultivated it, that it did not pay them to do it for less than its weight in silver—one dollar per ounce—and that they had ceased to cultivate it.

No. 25, in reference to the natural condition of cantharidin, referred to John M. Maisch, of Philadelphia, had not been replied to, but Mr. Garrigues, on behalf of Mr. Maisch, read a paper in answer to No. 28, on Cornus Florida, which had been referred to him last year.

No. 27, relative to the purgative power of the marc of Castor Beans, accepted by Dr. Stabler of Alexandria, was not replied to.

Edward Parrish, in reply to No. 29, the relative therapeutic value of imported and indigenous medicinal plants, accepted by Henry A. Tilden of New Lebanon, N. Y., read a paper, on behalf of Mr. Tilden, on the result of a partial investigation of the subject.

Mr. John D. Dix, of New York, from the committee appointed for that purpose, reported the draft of a communication to the Secretary of the Treasury of the United States, asking for a revision of his action in regard to the publication of a monthly list of imported drugs. It is believed that such publications can-

not be injurious to the interests of importers, but that on the contrary they are of great benefit to statisticians and others engaged in the diffusion of useful knowledge. The petitioners therefore pray that the publication may be resumed under such restrictions in reference to the names of importers as may be deemed proper. The memorial was adopted, and the President was instructed to sign the same and forward it to the department.

On motion of Mr. Brewer, of Boston, the plants received from the Department of the Interior were placed in charge of Prof. Asa Gray, of Cambridge Botanical Garden, for the benefit of the public, he having signified his willingness to take charge of them.

In reply to No. 30, on the practicability of raising arnica plants in the United States for medicinal purposes, referred to Mr. Tilden, it was replied that that gentleman had not been able to obtain the seeds. Mr. Dix remarked that arnica flowers could be imported cheaper from Germany than they could be picked here, if the ground was covered with them. He could procure the seeds for any person who was desirous of trying the experiment.

Alexander Cushman, in reply to No. 31, relative to Pepsin, read a detailed paper upon the subject, in the several relations of manufacture, sources, and modes of administration.

The several papers which had been read in reply to queries were then referred to the Executive Committee for publication —when at about 7 o'clock the meeting adjourned till 9 o'clock to-morrow morning.

Fourth day—Sept. 16th, 1859.

In the absence of the President, Mr. Colcord, the meeting was called to order by Wm. Procter, Jr., of Philadelphia, one of the Vice Presidents, at half past 9 o'clock.

Henry F. Fish of Waterbury, Connecticut, offered a resolution that a committee be appointed to consider the propriety of holding alternate sessions in the cities of New York, Philadelphia, Boston, Baltimore and Washington, and also the appointment of a permanent Secretary at Washington.

The consideration of the resolution was deferred.

The reading of scientific reports and papers being now in order, Dr. Battey took the chair whilst William Procter, Jr., read the answer to No. 32, "On Improved Formulæ for the Fluid Extracts, in view of their more general adoption in the next Pharmacopœia." This paper was illustrated by thirty three specimens of Fluid Extracts made by the formulæ recommended.

The following resolution offered by Edward Parrish was adopted.

Resolved, That the subject of offering prizes for scientific and other essays of merit to be read at the next annual meeting, be referred to the Executive Committee, with power to offer such prizes through the Pharmaceutical Journals as they may determine upon.

Dr. Robert Battey, of Georgia, now read an interesting paper in answer to No. 33, on the culture, and production of sugar from the Sorghum saccharatum, within the United States, etc. Dr. Battey enters minutely into the subject, especially in regard to the percentage of sugar in the juice, and its applicability to the manufacture of alcohol. He believes that under favorable circumstances the proportion of sugar may reach as high as 18 per cent.

On motion of Charles Ellis, of Philadelphia, it was resolved that a copy of Pereira's Materia Medica be presented to William Procter, Jr., for his essay on the fluid extracts.

No. 34, on Volatile Oils, was declined by L. T. Lazell, to whom it was referred.

No. 35, "The culture of the Grape in Missouri," referred to to A. Leitch, of St. Louis, was not replied to.

No. 36, on Liquor Ferri Iodidi, accepted by W. J. M. Gardon. An answer to this question had been received by the chairman, but was temporarily mislaid.

No. 37, (This question was referred to Mr. Peck, since deceased.)

No. 38, On the best vehicles for disguising the taste of quinia and its salts, &c., accepted by R. A. Payne, was not answered.

Edward Parrish, of Philadelphia, read an answer to No. 4, on Mustard. "What is the best formula for a permanent liquid preparation of white or black mustard seed, which may be used as a substitute for mustard plasters."

Samuel S. Garrigues now read a reply to No. 26, on Vanilla; "What is the source of the odor of vanilla, and has it any analogy to coumarin, the odorous principle of the Tonqua bean?"

Frederick Stearns, of Detroit, read on behalf of Mr. John Zimmerman of Cincinnati two volunteer papers upon the use of Catawba brandy and wine in Pharmacy. They were referred to the Executive Committee.

The subject of a place for holding the next session came up, and Dr. Battey, of Georgia, said that it was apparent that the majority were in favor of New York. He was willing to go to St. Louis the succeeding year if the brethren from that place would meet him at New York in 1860. The question being called for on the original motion of Dr. Squibb, it was resolved to meet in New York next year.

Alfred B. Taylor, of Philadelphia, offered a resolution deprecating the acceptance of hospitalities of their brethren at places where future conventions may be held.

Mr. Parrish seconded the resolve, and after speaking of the generous hospitality extended to them in Boston, said he wanted the thing to stop here, so that they could go to small places without incumbering them, when they were better able to entertain of themselves.

Wm. Cushman, of New York, was opposed to the resolve, and thought these entertainments were very useful in making members acquainted with each other. Mr. Garrigues expressed similar views.

The resolve was supported by Messrs. Meakim and Squibb, of New York, Battey of Georgia, and Procter, of Philadelphia.

The resolution having been amended, was laid over to be called up at the next meeting.

John M. Maisch, of Philadelphia, presented a continuation of his paper of last year, on testing the essential oils, which was read by Mr. Garrigues, and referred to the Executive Committee.

The Executive Committee presented the following names for election to membership, which were duly ballotted for and elected, viz.: John J. Toner of Wilmington, Delaware, and E. A. Pond of Rutland, Vermont.

Edward Parrish, of Philadelphia, read a short paper from

Henry A. Tilden of New Lebanon, N. Y., describing a new powdering apparatus, accompanied by two photographic views illustrating the apparatus. On motion the Executive Committee were directed to procure wood cuts of the apparatus to be printed with the description in the Proceedings.

Mr. Cushman of New York presented an arrangement for applying medicated vapors to the throat and lungs, which from its form is called a "Medicated Cigar," accompanied by an explanation of the manner of using it.

It was voted not to publish the paper, as the "Medicated Cigar" is patented.

Mr. Coddington, of New York, read a volunteer paper "On the probable influence of isomerism on the therapeutic power of substances."

Dr. W. H. Pile, of Philadelphia, read a paper accompanying a table of the specific gravity of water at various temperatures—which had been prepared with great care, and would be found of considerable practical utility in making investigations.

Mr. Colcord having arrived, he resumed his functions as President.

William Procter, Jr., on behalf of Ferdinand F. Mayer, of New York, read a paper on Liquor Ferri Iodidi and the tests for Iodine. The peculiarity of the solution recommended is the fact of its preservation by hyposulphite of soda.

Prof. George Thurber, of New York, presented specimens of Zamia integrifolia, the source of true Florida Arrow Root, with verbal remarks on its characteristics, which he was requested to put on paper for publication.

F. Chapman Hill, of Philadelphia, presented living specimens of Cantharis atrata, collected that morning near Waltham, Mass. And on the invitation of members agreed to prepare a paper on the subject of our native Cantharis for next year.

Alexander Cushman, of New York, read a paper on the comparative analyses of Price's and American glycerin, which was referred to the Executive Committee.

The committee on a list of subjects for the ensuing year offered the following, which was adopted, viz.:

The Committee to whom was referred the preparation of a

list of subjects for investigation the ensuing year, report the following, viz.:

1. Have we an indigenous vesicating agent or agents which may be advantageously substituted for the imported cantharides?

Accepted by William H. Warner, Rome, Georgia.

2. It is alleged that commercial citric acid contains a variable amount of water of crystallization, according to the temperature at which it is crystallized, and that it is adulterated with tartaric acid. *Query*,—Is this true? If so, does the variation materially affect the value of the acid? and what is the best practical test to demonstrate the presence of tartaric acid for commercial use?

Accepted by Charles T. Carney, of Boston.

3. What proportion of aconitia does the commercial aconite root yield by the process of Headland, (noted in the U. S. Disp.) and what impurities remain in it not separated by the process?

Accepted by Israel J. Grahame, of Baltimore.

4. The subject of the production of alcohol in the United States, viewed in reference to its manufacture from various sources, its commerce, its impurities, adulterations, tests of purity, and the statistics of its commercial relations. *Accepted by Frederick Stearns, of Detroit, Michigan.*

5. Several varieties of garlic are in use in Philadelphia and other parts of the country. *Query*,—Are these modifications of the same plant, or are they distinct species.

Referred to Prof. Robert P. Thomas, of Philadelphia.

6. Aloin as discovered by T. and H. Smith, of Edinburgh, has been introduced into therapeutics. *Question*,—What is the best and most practicable process for its manufacture on a considerable scale, and what are the best tests of its purity as a commercial substance.

Accepted by Edward Parrish, of Philadelphia.

7. Sulphate of ammonia derived from gas liquor is now used by some manufacturers for preparing liquor ammoniæ and other preparations of free ammonia. *Question*,—What are the advantages and disadvantages of using this salt instead of sal ammoniac?

Accepted by Charles Bullock, of Philadelphia.

8. Chamomile flowers of commerce are occasionally attacked by an insect, and greatly injured in value; and it is alleged that the flowers of a chrysanthemum and of another genus are sometimes found admixed as an adulteration in France. *Question*,—What are the best means of destroying the insect without injury to the flowers, and what are the adulterations of this drug as found in American commerce?

Accepted by Frederick L. John, of Philadelphia.

9. What is the active principle of arnica flowers? and what the best process for isolating it?

Accepted by Dr. Henry T. Cummings, of Portland, Maine.

10. What is the best process for preparing assafœtida plaster so as to preserve the activity of the drug unimpaired?

Accepted by William Procter, Jr., of Philadelphia.

11. Atropa belladonna is largely cultivated at New Lebanon, N. Y., for the preparation of the officinal extract. *Question,*—Can the root of that plant, as grown there, be employed advantageously as a source of Atropia?

Accepted by William Procter, Jr., of Philadelphia.

12. Japanese vegetable wax, derived from the Rhus succedanea, has been introduced into commerce. *Question,*—What are the qualities of this substance as compared with bees wax? And how far may it be used as a substitute for that substance in pharmacy?

Accepted by James S. Melvin, of Boston.

13. Paraffin has been suggested by Mr. Wayne, of Cincinnati, as a substitute for wax in cerates. *Question,*—Are there any therapeutic objections to this substitution? And if not, in what proportion should it be used as a substitute for wax in cerates?

Accepted by Charles T. Carney, of Boston.

14. To what extent is Carrageen collected on the coast of New England for the supply of commerce?

Accepted by A. P. Melzer, of Boston.

15. Conium maculatum has become naturalized in New England and New York. *Question,*—Can the seeds be collected in sufficient quantity for the preparation of Conia as an article of commerce?

Accepted by Henry F. Fish, of Waterbury, Conn.

16. What are the adulterations of saffron as found, in the commerce of the United States, and by what tests may they be distinguished?

Accepted by John D. Dix, of New York city.

17. Cubebs are occasionally adulterated with a capsular berry different from cubebs in appearance, and which, it is said, is done at Singapore. *Question,*—What plant yields this berry, and what are the properties of the berry as compared with cubebs?

Accepted by Prof. George Thurber, of New York city.

18. What proportion of digitalin can be obtained from American grown digitalis?

Accepted by Samuel S. Garrigues, of Philadelphia.

19. Can elaterium be profitably produced in the United States? What soil and situations are most favorable to the development of the plant?

And how does the elaterium produced compare with the best European drug?

Accepted by Henry A. Tilden, of New Lebanon, N. Y.

20. Is there an ergotized substance developed in Indian corn (Zea mays?) And if so, has it properties analogous to those of rye and wheat ergot?

Accepted by Prof. George Thurber, of New York city.

21. What it the best test of the therapeutical value of extract of Indian hemp, that may be applied by the apothecary, without resorting to its internal exhibition?

Accepted by Edward Parrish, of Philadelphia.

22. What is the active principle of Gillenia trifoliata? And is it an alkaloid or a neutral principle?

Offered for general acceptance.

23. The commercial history, production and statistics of extract of liquorice, including its several sources.

Accepted by John D. Dix, of New York city.

24. What are the claims of guaiac (Resina Guaiaci) to be considered a balsam?

Accepted by William Procter, Jr., of Philadelphia.

25. What are the changes which occur in the officinal ethereal oil (U. S. P.,) by keeping, and can these changes be retarded?

Accepted by Dr. Edward R. Squibb, of New York.

26. Are the salts of morphia of present commerce different in medicinal power from those formerly manufactured? And if so, to what cause is it to be attributed?

Accepted by Dr. Edward R. Squibb, of New York.

27. Has the average morphia strength of opium from Smyrna depreciated from its earlier value? And if so, to what extent?

Accepted by P. Wendover Bedford, of New York city.

28. Several species of Krameria (K. lanceolata and K. canescens, &c.,) are abundant in Texas and other parts of the South-west. *Question,*—Can these roots be substituted for the officinal Krameria triandra?

Accepted by Prof. George Thurber, of New York city.

29. It has been asserted that hops that have been used in obtaining the Lupulin of commerce are afterwards sold as hops. *Question,*—Is the assertion true? And if so, to what extent is it carried on? Where? And what are the best means of detecting the fraud?

Accepted by Charles A. Tufts, of Dover, N. H.

30. Patents in their relation to pharmacy and medicine.

Accepted by Edward Parrish, of Philadelphia.

31. An inquiry as to the comparative value of the Georgia, St. Vincent, Bermuda, and other arrow roots of commerce, derived from Maranta arundinacea; whether there is any distinctive characteristics arising from climate, soil, mode of preparation, or other causes that would give a preference to either?

Accepted by Evan T. Ellis, of Philadelphia.

32. The seed of the sunflower (Helianthus annuus) is a domestic remedy for coughs. It is also used for the heaves in horses. *Question*,—Do the seeds possess the virtues ascribed to them? If so, to what principle existing in them is their medicinal power to be attributed? And does the principle exist in other portions of the plant?

Accepted by Alexander Cushman, of New York city.

33. European Pharmacy—what are the chief differences and points of of resemblance between it and our own?

Accepted by Robert Battey, M. D., of Rome, Georgia.

34. What is the most eligible method of keeping camphor in the form of powder?

Accepted by Henry F. Fish, of Waterbury, Conn.

35. An essay on the guarana of Brazil.

Accepted by Henry F. Fish, of Waterbury, Conn.

36. An essay on the products resulting from the distillation of bituminous coal and allied substances.

Referred to and accepted by William H. Whitmore, of Boston.

37. What are the principal sources of oil of sassafras, its mode of manufacture, and the quantity produced annually?

Accepted by Alphæus P. Sharp, of Baltimore.

38. What are the principal sources of pink root and seneka snake root? The probable amount collected annually, and the general character of the roots as brought into the market from the various sources?

Accepted by Lewis F. Dohme, of Baltimore.

39. The American species of Cantharis, as regards their usefulness in medicine, as vesicants, their existing quantity in view of the supply of commerce, and other information regarding them.

Accepted by F. Chapman Hill, of Philadelphia.

40. We have an indigenous plant called Pyrularia oleifera, the fruit of which yields a large amount of fixed oil. *Query*,—Can the oil be applied to pharmaceutical purposes? And can the plant be propagated to advantage for the production of the oil?

Accepted by S. S. Garrigues, of Philadelphia.

41. What are the relative properties of the new resin of scammony, of McAndrews and Sons, prepared from the dried roots, and the best varieties of commercial virgin scammony?

Accepted by Israel J. Grahame, of Baltimore.

Respectfully submitted by

WILLIAM PROCTER, JR.,
FREDERICK STEARNS,
CHARLES T. CARNEY,
ISRAEL J. GRAHAME.

Sept. 16th, 1859. *Committee.*

Mr. Ellis, from the Auditing Committee, reported that they had examined the books of the Treasurer and found them correct.

A vote of thanks was then given to Mr. Colcord for his valuable services as Treasurer during several years past.

The subject of dropping members, who are three years in arrears with their dues, caused some discussion, but it was decided to let the matter pass as it is—the suspension list to be published in the annual list of the Treasurer.

The Committee appointed to examine specimens, &c., made the following report, which was referred to the Executive Committee:

The Committee appointed to examine and report upon the articles sent for exhibition before the American Pharmaceutical Association, report that they find a large and interesting collection of chemicals, pharmaceutical preparations, and apparatus, intended for the use and convenience of pharmaceutists, which have attracted much notice and commendation from the members in attendance, is eminently creditable to the exhibitors generally, and affords a gratifying evidence of the progress of pharmacy, and its collateral arts and sciences. To discriminate and determine intelligently the relative merits of many of the similar articles deposited by different manufacturers, would be a difficult task under any circumstances, and with the limited time and opportunity afforded the Committee, simply impossible for them. They therefore confine themselves to making up a list of the articles, with the names of the exhibitors and manufacturers, which they have endeavored to render as complete as possible in order that it may be placed upon record.

Powers & Weightman, of Philadelphia. Sulphate of morphia, sulphate of quinia, chloroform, lactate of zinc, valerianate of ammonia, valerianate of quinia, cyanide of zinc, bromide and iodide of cadmium, hypophosphite of ammonia, tartar emetic, Rochelle salt, caffein and sixteen other preparations.

Dr. Henry T. Cummings, of Portland, Me. Spirit of nitre and Hoffman's anodyne.

B. J. Crew & Co., of Philadelphia. Hypophosphites of soda, lime and ammonia, Liebig's cyanide of potassium, citrate of potassa, gallic acid, cyanide of bismuth, citrate of iron and ammonia and chloroform.

Tilden & Co., of New Lebanon, N. Y. Podophyllin, sanguinarin, corydalin and other eclectic resinoid preparations, numbering 40 kinds, 125 different fluid extracts and 12 kinds of sugar-coated pills and granules.

H. Thayer & Co., of Cambridge, Mass., deposited large specimens of fluid extracts of Calisaya bark, Turkey rhubarb, cotton root, squills, ipecac, hydrastis and buchu, besides 12 smaller samples of other fluid extracts.

Charles T. Carney, of Boston. Solution of citrate of magnesia, sulphate and other preparations of iron, compound syrup of the hypophosphites, tinctura cinchonæ ferrata, &c. Mr. Carney also deposited paraffin, kerosine illuminating oil, and oil for removing grease; also, samples of wines and brandy from native grapes of New England, made by E. Paige & Co., Mass., also American wines and cider made by S. H. Allen, Esq., of Shrewsbury, Mass.

Charles H. Atwood, Importer, of Boston. Specimens of fine chemicals, as iodine, acetate of potassa, iodide and bromide of potassium, valerianate of quinia, dextrine, &c., besides bottles for shop furniture labelled.

Dr. Robert Battey, of Rome, Georgia. "Sorgho brandy" from sugar of Sorghum saccharatum. This is a new and interesting spirit, more analogous to *rum* than to brandy, and can be offered at a low price.

J. W. Norcross & Co., of Boston. Various Pharmaceutical articles, as plasters, Quevenne's iron, adhesive plaster, patent lint, sponge, gloves, &c.

Dr. E. R. Squibb, of New York. Compound extract of colocynth, pil hydrargyri, ether, spirit ammoniæ aromat., per nitrate of iron, chloroform, Hoffman's anodyne, spirits of nitre, per sulphate of iron, pure subnitrate of bismuth, Hydrargyri c. Creta, Dover's powder, &c.; also, a case containing solution of per sulphate of iron and liquor ammonia in separate bottles, in the proper proportions, for extemporaneously preparing hydrated oxide of iron for antidotal purposes.

E. Blatchford, of Rockport, Mass. Specimens of pure *hake*, *haddock* and *cod liver* oils, and crude isinglass, (the dry swimming bladder from which the New England isinglass is made.)

Apparatus.

From Charles T. Carney, of Boston. An arrangement of apparatus for "hydrotimetrie," or the quantitative determination of the proportions of matters held in solution in the waters of springs and rivers.

From Wm. F. Shaw of Boston. Patent gas stoves and heaters of various styles, with flexible connectiug tubes for attaching to gas burners.

From H. D. Lockwood, of Charlestown, Mass. Davidson's electric syringe.

From Lewis & Richardson, of Boston. Various styles of Lewis's elastic and pump syringes,

Dr. Wilson H. Pile, of Philadelphia. Specific gravity bottles, thermometers for chemical purposes, urinometers, hydrometers, &c.

From the Boston Glass Company. Labelled glass ware for shop furniture.

From E. Kendall, of New Lebanon, N. Y. An aneroid barometer.

From Codman & Shurtleff, of Boston. English catheters, nursing bottles, ear trumpets, specimens of galvanic batteries, &c.

From the New England Glass Company. A large glass show mortar, silvered inside.

From Fairlamb & Co., of Boston. Prescription and counter scales for druggists.

From Wilson, Fairbanks & Co. An old bell metal mortar cast in

1641, of good style and shape, and in very good preservation, interesting from its antiquity.

Respectfully submitted,
AMBROSE SMITH,
GEORGE THURBER,
A. P. SHARP,
WM. PROCTER, JR.,
Committee.

Boston, Sept., 15th, 1859.

The subject of altering the Constitution, so as to allow chemists to become members of the Association, was postponed till next year.

William Procter, Jr., offered the following resolution, which was adopted:

"*Resolved*, That in future meetings of the Association it will greatly keep up the interest of the sessions if it be determined to make the reading of scientific papers proceed parallel with the other business," after the second session, so as not to delay till the last, when many members have left, many valuable and interesting communications.

Mr. Carney, Chairman of the Executive Committee, asked for instructions in reference to publishing reports of Proceedings and papers. He was in favor of publishing very full reports.

Dr. Squibb, Mr. Parrish, Mr. Procter, Mr. Hegeman and others were also in favor of full reports.

The President suggested that the funds of the Association were not sufficient to publish the Proceedings in full, and the Executive Committee would find themselves on difficulty on seeking a publisher.

A motion of Dr. Squibb, to assess the members for funds to publish the Proceedings, was voted down; and a resolution of Mr. Hegeman, to ask for contributions for that purpose, was adopted.

Dr. Battey, of Rome, Georgia, offered a resolution thanking the Massachusetts College of Pharmacy for the hospitalities received at their hands.

Edward Parrish moved that a vote of thanks be offered to the proprietors of the newspapers who had published reports of the Proceedings for their courtesy, and to the reporters for their careful reports, which was unanimously adopted.

Mr. Kiersted, of New York, offered resolutions of thanks to the President and Recording Secretary, which were adopted.

On motion, it was voted to request of Dr. Robert Battey a copy of his remarks to the Convention, whilst acting as Chairman *pro tem.*, for publication in the Proceedings.

On motion of Edward Parrish, it was directed that any papers which had not come to hand in time for this meeting, be referred to the Executive Committee.

The Chairman was authorized to remodel certain Committees during the recess.

The President expressed his thanks for the courtesy received at the hands of the Convention, whereupon the minutes were approved, and at three o'clock the Association adjourned, to meet in New York, on the second Tuesday in September next, at three o'clock, P. M.

CHARLES BULLOCK,
Recording Secretary.

FORMULÆ FOR THE FLUID EXTRACTS IN REFERENCE TO THEIR MORE GENERAL ADOPTION IN THE NEXT PHARMACOPŒIA.

BY WILLIAM PROCTER, JR.

(From the Proceedings of the American Pharmaceutical Association, Boston, 1859.)

Having accepted at the annual meeting of the Association for 1858 the subject of Improved Formulæ for the Fluid Extracts, I have occupied no inconsiderable portion of time in carrying on the investigations required in giving a rational solution to the questions involved.

After some reflection it was determined to consider in groups the several drugs appropriate for fluid extracts, the generic character of which was to be derived from an analogy of composition or of behaviour with solvents, by which the same process could be employed for each member of a group: leaving all those drugs which possessed some peculiarity of constitution, rendering it necessary, to be treated by special processes.

In the formulæ adopted, it has not been designed to retain in solution all the matter dissolved by the menstruum from each drug, as suggested by some; nor to reject all not usefully medicinal as sought by others; but to extract as far as possible all the valuable ingredients, and to condense them into the required

bulk, of an ounce to the fluid ounce, except in the oleoresins, in the way least calculated to injure their medicinal virtues and sensible qualities, leaving the resulting menstruum appropriate for retaining the active matter in solution.

As regards the means for their preservation from decomposition, alcohol and sugar have been employed, as the cases demanded, and in a few instances acetic acid is added for special reasons. The process of percolation has been almost invariably used, as best adapted to effect the desired objects, and the formulæ, both in manipulation and quantities, are based on the supposition that they are to be carried out in the shop or laboratory of the apothecary, and not on the large scale by the manufacturer.

Where alcohol has been used as the agent for preservation, it has been employed in the form of the first dense solution obtained in the percolation, regulating the quantity reserved for this purpose by the quantity of alcohol to be retained in the fluid extract, and evaporating the weaker liquors till reduced to a bulk sufficient to make up the required measure by an indirect heat of about 150° F. in an open vessel.

When sugar has been employed as the preservative agent, it is added to the percolate before the completion of the evaporation, so as to take advantage of the well ascertained solvent power of sugar in regard to resinous and apothemic matter.

A new class of oleoresinous fluid extracts has been suggested, in which the stronger aromatics have been introduced, such as cloves, cinnamon, cardamom, &c., and which possess, for certain uses, very desirable advantages from their concentration.

The number of oleoresins has been considerably increased on the ground that they represent their respective sources more completely, and in smaller bulks than any other form of fluid or semifluid extracts. For this reason also it is insisted that they should occupy a distinct position under the name of "Oleoresins," and thus avoid the necessity of making a discrepancy in the proportional strength of all those preparations which go by the name of fluid extracts.

In bringing forward so large a number of fluid extracts, it is not intended to recommend that all of them should be introduced into the Pharmacopœia, but to afford sufficient scope in the

choice to be made by the framers of that codex, assuming the processes to yield satisfactory products.

Class First.

EXTRACTUM ACONITI FOLIORUM FLUIDUM.

Take of Aconite leaves in powder (No. 60*) 16 ounces Troy,
Alcohol,
Water, of each a sufficient quantity.

Mix two pints of alcohol with one of water, moisten the powder evenly with four fluid ounces of the mixture, pack it firmly in a percolator, and having covered the surface with a disc of cloth† gradually pour on the same menstruum until three pints have passed; reserve the first twelve fluid ounces, evaporate the remainder at 150° F. on a water bath to four fluid ounces, mix it with the reserved tincture, and after standing twenty four hours filter through paper.

In the same manner prepare

EXTRACTUM BELLADONNÆ FLUIDUM.

From Belladonna leaves, in powder.

EXTRACTUM BUCHU FLUIDUM.

From Buchu, in powder. No. 40.

EXTRACTUM DIGITALIS FLUIDUM.

From Digitalis, in powder.

EXTRACTUM HYOSCYAMI FLUIDUM.

From Henbane leaves, in powder.

EXTRACTUM MATICO FLUIDUM.

From Matico, in powder.

EXTRACTUM STRAMONII FLUIDUM.

From Thorn Apple leaves in Powder.

EXTRACTUM VALERIANÆ FLUIDUM.

From Valerian in powder.

* "No. 60" indicates that the sieve through which the powder is passed, has 60 meshes to the linear inch—and so of other numbers.

†By this is intended a circular piece of muslin, linen or lint, or any insoluble porous tissue to prevent the disturbance of the powder. Filtering paper perforated with holes will do, but the disc of cotton cloth is cheap and to be preferred. The pieces need not be thrown away, but may again be used after washing.

REMARKS.—In this class are placed the narcotic leaves, and certain oleoresinous substances. Aconite and Valerian will represent them. When these substances, reduced to a powder that will pass a sieve of 60 meshes to the linear inch, are uniformly moistened, by rubbing, with a fourth of their weight of the alcoholic mixture, they are yet pulverulent, but exhibit a damp appearance, and readily pack in the percolator. Glass funnels answer a good purpose, but cylindrical percolators may be employed. In either case, if the powder has been properly compacted, the menstruum when added passes very deliberately, by drops, and it will be found that the proportion of the percolate which is directed to be reserved will contain nearly all of the most valuable parts of the drug. In this way the action of heat and air is entirely prevented on the most important part of the extracted matter, and where volatile oils are concerned this fact is particularly important. It is surprising what concentrated liquors are thus obtained when the trouble is taken to pass the powder through a sieve of the fineness indicated. It will be observed that the process adopted for this class, is nearly that of Prof. Graham, for fluid extract of Valerian. It will require strict attention to the details of the process to get the results intended, because success depends on the slowness of the percolation without any regulation at the outlet of the funnel.

The alcoholic condition of the resulting preparations is nearly 50 per cent. In this fluid the chlorophylle is but partly soluble, and much of this principle is left in the exhausted residue.

Class Second.

EXTRACTUM ACONITI RADICIS FLUIDUM.

Take of Aconite root, in powder, (No. 60) 16 ounces, Troy,
Alcohol, (sp., gr. ·835) a sufficient quantity.

Moisten the powder with six fluid ounces of alcohol, pack it firmly in a cylindrical percolator, cover the surface with a disc of cloth, and gradually pour on alcohol until three pints of tincture have passed, reserving the first half pint. The remainder of the tincture is then distilled till reduced to half a pint and while hot mixed with the reserved tincture. After standing twenty-four hours filter through paper.

In the same manner prepare

EXTRACTUM CIMICIFUGÆ FLUIDUM.

From Black Snakeroot in fine powder.

EXTRACTUM HELLEBORI FLUIDUM.

From Black Hellebore in fine powder.

EXTRACTUM IPECACUANHÆ FLUIDUM.

From Ipecacuanha in fine powder.

EXTRACTUM JALAPÆ FLUIDUM.

From Jalap in fine powder.

EXTRACTUM PODOPHYLLI FLUIDUM.

From Mayapple root in fine powder.

EXTRACTUM SANGUINARIÆ FLUIDUM.

From Bloodroot in powder.

EXTRACTUM VERATRI VIRIDIS FLUIDUM.

From American Hellebore root, in powder.

REMARKS.—The powders for this class of extracts should be, at least, so fine as to pass through a sieve 60 meshes to the linear inch, and even dusted Jalap and Ipecacuanha may be employed with advantage. To test the extracts, all that was contained in the original tinctures, including the sediment caused by the evaporation, was retained in the vials without filtration as directed in the recipe, so as to observe the effects of keeping. In the case of Jalap a very slight deposit of resinous matter adhered to the bottom. In the Cimicifuga and Podophyllum a little more of a pulverulent and flocculent consistence separated, but in quantity too small to materially affect the activity of the preparations, even if resinous in its nature. The Fluid Extract of Ipecac will be the proper means of making the Syrup, and properly diluted it affords a very energetic emetic. The alcoholic strength of these fluid extracts is about 50 per cent.

Class Third.

EXTRACTUM COLCHICI RADICIS FLUIDUM.

Take of Colchicum Root in powder, (No. 50,) 16 ounces,
Diluted alcohol, a sufficient quantity.

Mix the Colchicum powder with four fluid ounces of the diluted alcohol, pack it closely in a percolator, cover the surface with a disc of cloth, and gradually add more of the diluted

alcohol until three pints of tincture have passed, reserving the first twelve fluid ounces. Evaporate the remainder of the tincture at 150° Fahr. to four fluid ounces, mix it with the reserved tincture, and after standing twenty-four hours, filter through paper.

In the same manner prepare

EXTRACTUM COLOMBÆ FLUIDUM.

From Columbo, in powder, No. 40.

EXTRACTUM CHIRAYTÆ FLUIDUM.

From Chiretta, in powder, No. 50.

EXTRACTUM EUPATORII FLUIDUM.

From Boneset, in powder, No. 50.

EXTRACTUM GENTIANÆ FLUIDUM.

From Gentian, in powder, No. 50.

EXTRACTUM SCILLÆ FLUIDUM.

From Squill, in powder, No. 30.

EXTRACTUM SENEGÆ FLUIDUM.

From Seneka, in powder, No. 50.

EXTRACTUM SERPENTARIÆ FLUIDUM.

From Virginia Snakeroot, in powder, No. 60.

REMARKS.—In making Fluid Extract of Colchicum, by this formula, a whitish colored sediment is deposited from the reserved tincture by standing, and also by the evaporation of the last liquors, and after the mixture of the two the quantity seemed to slightly increase. The nature of this matter has not been determined, but it is believed to be identical with that deposited from the wine, and in no wise connected with the activity of the preparation. It is well, therefore, in this instance, to postpone the filtration of the fluid extract when not wanted for immediate use. It is highly probable that this substance may be avoided by employing concentrated alcohol to extract the root, and subsequently distilling off sufficient of it to reduce the alcoholic strength of the fluid extract to that above exhibited, which is about 25 per cent.

In regard to the permanency of Fluid Extract of Seneka, there is some doubt, theoretically, owing to the tendency of an alco-

holic solution of Seneka to deposit polygalic acid in cool weather. It remains to be observed whether this will prove an objection to the formula. Made with sugar, it has been known to gelatinize and lose its fluidity, possibly owing to the action of the pectin, or pectic acid which is known to be an ingredient of the root.

From the gummy nature of Squill, it is necessary to use a coarser powder than would be proper for most other substances.

Columbo in its behaviour with diluted alcohol is analogous to Rhubarb. If very fine, the percolation is too tardy—hence a coarser powder is directed.

Fluid Extract of Serpentaria, fully represents that drug when made by this formula. It is possible the weak alcoholic menstruum may not be so highly approved as a saccharine one, but it may be sweetened before using.

Class Fourth—Saccharine Fluid Extracts.

EXTRACTUM CINCHONÆ FLUIDUM.

Take of Yellow Peruvian bark, in powder, (No. 50,) 16 ounces Troy.
Sugar, 10 ounces.
Diluted alcohol, a sufficient quantity.

Moisten the Peruvian Bark with half a pint of diluted alcohol, let it stand half an hour, pack it in a percolator firmly, cover it with a disc of cloth, and gradually add diluted alcohol till three pints of tincture have passed. Evaporate the tincture at a moderate heat on a water bath to one pint, add the sugar, and continue the evaporation till reduced to one pint, and strain while hot.

In the same manner prepare

EXTRACTUM CHIMAPHILÆ FLUIDUM.

From Pipsissewa, in powder, No. 50.

EXTRACTUM DULCAMARÆ FLUIDUM.

From Bittersweet, in powder, No. 50.

EXTRACTUM GALLÆ FLUIDUM.

From Galls, in powder, No. 40.

EXTRACTUM GERANII FLUIDUM.

From Cranesbill, in powder, No. 50.

EXTRACTUM GRANATI RADICIS FLUIDUM.

From Pomgranate root bark, in powder, No. 60.

EXTRACTUM RUBI FLUIDUM.

From Blackberry root, in powder, No. 50.

EXTRACTUM SARSAPARILLÆ FLUIDUM.

From Sarsaparilla, in powder, No. 50.

EXTRACTUM SPIGELIÆ.

From Pink root, in powder, No. 50.

EXTRACTUM UVA URSI FLUIDUM.

From Uva Ursi, in powder, No. 50.

REMARKS.—The astringent and apothemic drugs are less liable to decompose with a saccharine menstruum than with an alcoholic liquid. A decided advantage is gained by adding the sugar before the completion of the evaporation, and in some cases it might be better to add the sugar at first, and evaporate the alcohol afterwards.

When carefully prepared, as described in the formulæ, these fluid extracts are dense, clear, dark-colored solutions, with the exception of the Cinchona. This is, as in the preparation of Mr. Taylor, (which is of half the strength,) a reddish-brown, opaque, syrupy liquid, highly charged with the properties of Calisaya bark. It has not been sought to render this a clear solution by excluding the precipitate of cinchotannates of the alkaloids, which occurs by cooling, nor to modify and render it soluble by the use of acids. If it should be determined to make the preparation clear, in case it is adopted into the Pharmacopœia, it may be better to evaporate the tincture to one-fourth, let it stand till cool, strain out the precipitate, add the cloudy liquid to the sugar, and when dissolved evaporate till reduced to a pint by a water bath heat. The small portion of undissolved matter that occasions the cloudiness of the liquid will be dissolved by the sugar during the heating process. The fluid extract of Blackberry root, is an admirable astringent addition to diarrhœa mixtures, as those of Nutgalls and Cranesbill are to gargles.

The fluid extracts of Chimaphila, Dulcamara, Pomgranate, Spigelia, and Sarsaparilla, fully represent the several drugs, and by dilution with three times their bulk of simple syrup afford syrups of the ordinary strength.

Class Fifth. Acetic Fluid Extracts.

EXTRACTUM ERGOTÆ FLUIDUM.

Take of Ergot, in fine powder, (No. 60,)	16 ounces
Acetic acid,	half a fluid ounce,
Diluted alcohol,	a sufficient quantity.

Mix the acid with three pints of the diluted alcohol, moisten the ergot uniformly with half a pint of the mixture, pack it in a conical percolator, cover it with a disc of cloth, and add gradually the remainder of the acidulated alcohol, reserving the first twelve fluid ounces of tincture, and continuing the process until three pints more have passed, using diluted alcohol at the last. Evaporate this last portion to four fluid ounces, at a temperature not exceeding 150° F., mix it with the reserved tincture, and filter through paper.

In the same manner prepare

EXTRACTUM CONII FLUIDUM.

From Hemlock leaves in powder, No. 60.

EXTRACTUM LOBELIÆ FLUIDUM.

From Lobelia leaves in powder, No. 60.

REMARKS.—In each of the drugs yielding these fluid extracts, there exists an alkaloid united with an organic acid, as a salt, which is so unstable in its nature, as in each case to be partially decomposed by the ebullition of its solution. This is more particularly the case with Conium and Ergot. The acetic acid controls this tendency almost completely, below 150° Fahr. It will be observed that this formula differs from that proposed two years ago in a report to the Association, in which Ether was employed to remove the fixed oil. Ergot percolates more readily and effectually after the removal of the oil by Ether, than before, but when it is reduced to a powder by a seive of 60 meshes per inch, it is readily exhausted by slow percolation with the precautions indicated. Further, the fluid extract prepared in this manner has been carefully tested, during twelve months, by several practitioners who are satisfied of its efficiency.

The fluid extracts of Conium and Lobelia made in this way, from the carefully dried plants, are quite unexceptionable.

Class Sixth. Oleoresinous Fluid Extracts.

EXTRACTUM CAPSICI FLUIDUM.

Take of Capsicum in powder, No. 50, sixteen ounces
Alcohol (deodorized) a sufficient quantity.

Moisten the Capsicum with four fluid ounces of the alcohol, pack tightly in a percolator, cover the surface with a disc of cloth, and pour on alcohol gradually until two pints have slowly passed. Reserve the first twelve fluid ounces, and evaporate the remainder to four fluid ounces by a gentle heat not exceeding 150 Fahr., mix it with the reserved tincture, and filter through paper.

In the same manner prepare

EXTRACTUM CANELLÆ FLUIDUM.

From Canella in powder. No. 60.

EXTRACTUM CARDAMOMI FLUIDUM.

From Cardamom in powder. No. 50.

EXTRACTUM CARYOPHYLLI FLUIDUM.

From Cloves, in powder. No. 50.

EXTRACTUM CINNAMOMI FLUIDUM.

From Ceylon Cinnamon in Powder. No. 60.

EXTRACTUM CUBEBÆ FLUIDUM.

From Cubebs in powder. No. 50.

EXTRACTUM INULÆ FLUIDUM.

From Elecampane in powder. No. 60.

EXTRACTUM IRIDIS FLORENTINÆ FLUIDUM.

From Orris root, in powder. No. 60.

EXTRACTUM LUPULINÆ FLUIDUM.

From Lupulin.

EXTRACTUM MYRRHÆ FLUIDUM.

From Myrrh recently powdered. No. 30.

EXTRACTUM PYRETHRI FLUIDUM.

From Pellatory root, in powder. No. 50.

EXTRACTUM PIMENTÆ FLUIDUM.

Take of Allspice, in powder. No. 50.

EXTRACTUM XANTHOXYLI FLUIDUM.

From Prickly Ash bark in powder. No. 50.

EXTRACTUM ZINGIBERIS FLUIDUM.

From Jamaica Ginger, in powder. No. 60.

REMARKS.—This is a new class of Fluid Extracts embracing the more important aromatics, and stimulants owing their virtues to oleoresins. By the employment of Atwood's deodorized alcohol of 95 per cent., the menstruum does not depreciate the odors, and when the concentrated portion is added, but little if any precipitation occurs. Several of the extracts are more appropriate for dental purposes than medicine, instance the Pellatory, Elecampane, Xanthoxylum, Orris, and Myrrh, although most of them may be used in medicine. The Fluid Extract of Cubebs as thus made has some advantages over the oleoresin in mixtures that are not emulsive. The preparations of cloves, cardamom and ginger are admirable carminatives for pills or mixtures, and the capsicum affords a stimulant for external application well fitted as an addition to liniments, where a decided impression is needed.

By combining the fluid extracts of ginger, cloves and cinnamon in the proportion of a fluid ounce of the former, to half a fluid ounce each of the two latter, a liquid is obtained, which, when applied by means of two or three layers of lint or Canton flannel, saturated, affords an excellent extemporaneous spice plaster. Or a compound fluid extract may be made by the following formula.

EXTRACTUM AROMATICÆ FLUIDUM.

Take of	Ginger in powder,	eight ounces.
	Cloves "	four ounces.
	Cinnamon "	four ounces.
	Alcohol,	a sufficient quantity.

Mix the powders, moisten them with four fluid ounces of alcohol, pack them in a percolator, cover the surface with a disc of cloth, and pour on alcohol until two pints have slowly passed. Reserve the first twelve fluid ounces, evaporate the remainder to four fluid ounces, and mix it with the reserved tincture and filter.

When it is desirable to increase the stimulation of this application, add a small quantity of capsicum.

In the preparation of these fluid extracts, the powders should be as fine as possible, provided the substances are not injured

thereby. In the case of myrrh, the tears alone should be used, reduced to powder simply, by trituration without sifting.

EXTRACTUM RHEI FLUIDUM.

Take of Rhubarb in powder, (No. 40,) sixteen ounces, Troy.

Sugar,	eight ounces.
Alcohol,	a pint.
Diluted Alcohol,	a sufficient quantity.

Moisten the Rhubarb with four fluid ounces of the alcohol, pack it moderately in a conical percolator, cover it with a disc of cloth and pour on the remainder of the alcohol; when it has disappeared from the surface, continue the percolation with diluted alcohol until three pints have passed, observing to separate the first pint and set it aside in a warm place till reduced to six fluid ounces. Add the sugar to the other two pints, evaporate it to ten fluid ounces, and whilst hot mix it with the concentrated reserved tincture and strain if necessary.

REMARKS.—This formula differs but little from the officinal. The use of strong alcohol at first enables the operator to extract the more valuable ingredients and get them in a concentrated form without injury from heat. The 6 fluid ounces of result from the evaporation of the first tincture is a thick molasses-like liquid containing nearly all the resinous and odorous matter of the root. During the evaporation of the last tincture after adding the sugar, the alcohol is more rapidly dissipated if it is frequently stirred with a spatula. It is important to free the preparation as much as possible from alcohol, in evaporating the saccharine portion, to prevent the crystallization of the sugar, as enough of alcohol is retained in the first liquid to supersede the necessity of adding the tincture of ginger. It will be noted that the aromatics have been omitted from this formula. This has been done for the following reasons. 1st. Fluid Extract of Rhubarb is generally prescribed with other medicines in which case it is easy to add the aromatics according to the preference of the prescriber. 2d. Their presence covers up to a considerable extent the peculiar distinctive odor and taste of the drug, and thus prevents a correct judgment of the perfection of the preparation. 3d. When free from the aromatics, the fluid extract affords a means of making the simple syrup of Rhubarb extemporaneously that is very convenient in warm weather.

EXTRACTUM SENNÆ FLUIDUM.

Take of	Senna in powder, No. 60,	sixteen ounces, Troy.
	Sugar,	eight ounces, Troy.
	Diluted Alcohol,	a sufficient quantity.

Moisten the senna with four fluid ounces of dilute alcohol, and pack it in a conical percolator, cover it with a disc of cloth, and pour on diluted alcohol until three pints have slowly passed. Reserve the first pint, and in a warm place let it evaporate to half a pint. To the remaining two pints of tincture add the sugar, and in a water bath concentrate the solution to half a pint, and mix it with the concentrated tincture, and strain if necessary. When it is desirable to aromatise this fluid extract, add 16 minims of oil of cloves dissolved in half a fluid ounce of tincture of ginger to the quantity of the formula.

Remarks.—In this formula, it will be observed, the aromatics and Hoffman's Anodyne are omitted. If the senna is passed through a sieve 50 or 60 meshes to the inch, and a funnel-shaped percolator used, the first pint of tincture will contain most of the valuable portion of the senna, and by the precautions suggested in its evaporation, it is not injured by the process. The reasons for omitting the aromatics are the following. 1st. The quality of the preparation, when finished, can be better determined by its odor and taste. 2d. The fluid extract can be employed to make the fluid extracts of Senna and Spigelia and Senna and Rhubarb extemporaneously when desired. 3d. The aromatics can be added when required, or varied to suit the taste of the physician or patient. 4th. The proportion of alcohol retained in the preparation is sufficient to keep it from spoiling without Hoffman's Anodyne.

EXTRACTUM SPIGELIÆ ET SENNÆ FLUIDUM.

Take of	Pinkroot in powder, No. 60,	ten ounces, Troy.
	Senna in powder, No. 50,	six ounces, "
	Sugar,	ten ounces. "
	Carbonate of Potassa,	four drachms.
	Oil of Caraway and Anise,	each 10 minims.
	Diluted Alcohol,	a sufficient quantity.

Mix the Pink root and Senna intimately together, moisten them with half a pint of diluted alcohol, pack the mixture in a

conical percolator, cover the surface with a disc of cloth, and pour on diluted alcohol until three pints have passed, reserving the first pint. Evaporate the reserved tincture at a gentle heat till reduced to six fluid ounces, mix the sugar with the remainder, and evaporate it to ten fluid ounces, mix this with the concentrated tincture, and having triturated the oils with the carbonate of potassa, dissolve them in the fluid extract, and strain.

Fluid Extract of Senna and Pinkroot may also be prepared in the following manner:

Take of Fluid Extract of Pinkroot,	ten fluid ounces.
Fluid Extract of Senna,	six fluid ounces.
Carbonate of Potassa,	half an ounce.
Oil of Caraway and Oil of Anise,	each 20 minims.

Mix the fluid extracts and dissolve in them the carbonate and oils previously triturated together.

Remarks.—Fluid Extract of Spigelia and Senna made by the above recipes varies slightly, theoretically, from the officinal; the proportion of the two main ingredients is slightly varied so as to make them, taken together, an ounce to the fluid ounce. The manipulation is calculated to afford a better preparation than the officinal recipe. The second formula will be found a great convenience in making the preparation extemporaneously, in the quantity it may be needed.

EXTRACTUM RHEI ET SENNÆ FLUIDUM.

Take of Fluid Extract of Rhubarb,	four fluid ounces.
Fluid Extract of Senna,	twelve fluid ounces.
Bicarbonate of Potassa, in powder	half an ounce.
Tincture of Ginger,	a fluid ounce.
Oil of Cloves,	eight minims.
Oil of Anise,	sixteen minims.

Dissolve the Bicarbonate of Potassa in the fluid extracts, and add to them the oils previously dissolved in the tincture of ginger, and mix them.

Remarks.—This preparation is an extemporaneous imitation of a recipe published in the 25th volume of the American Journal of Pharmacy, page 23. It is believed to possess sufficient merit to have a place in a general collection of the fluid extracts.

EXTRACTUM SARSAPARILLÆ FLUIDUM COMPOSITUM.

Take of Sarsparilla, in powder, No. 30,	twelve ounces Troy.	
Dulcamara in powder, No. 30,		
Guaiacum wood, rasped,		
Pipsissewa in powder, No. 30, each,	four ounces.	"
Liquorice Root in powder,		
Sassafras Bark in powder of each,	two ounces.	"
Sugar,	ten ounces.	"
Diluted Alcohol,	a sufficient quantity.	

Mix the Sarsaparilla, Dulcamara, Guaiacum, Pipsissewa and Liquorice Root intimately together, moisten them with two pints of diluted alcohol, allow them to macerate twenty-four hours in a covered vessel, pack them tightly in a cylindrical percolator, and pour on diluted alcohol until five pints have slowly passed. Moisten the Sassafras with a fluid ounce of the tincture, pack it in a percolator and pour on more of the tincture till two fluid ounces have passed. Evaporate the remainder of the tincture on a water bath to a pint, add the sugar, continue the evaporation till reduced to 14 fluid ounces, add the tincture to sassafras, mix them and strain, so as to get a pint of fluid extract.

Remarks.—The writer is aware of the difficulty that will present in following rigidly the directions of this formula, owing to the trouble of obtaining the ingredients in powder. This is, however, not insuperable, either with the mortar on a small scale or through the drug grinder in quantity. Yet in view of the probability of the ingredients being used in very coarse powder, it has been directed to mix them intimately and macerate in sufficient menstruum to saturate them, then to pack them tightly in the percolator. On a small scale it will, under these circumstances, be found advantageous to beat the ingredients in a mortar before packing. On a large scale, digestion for a time in hot dilute alcohol at 150° in a close vessel, will aid greatly in the subsequent extraction by percolation.

It will be observed that very material changes are suggested in this formula. As it now stands in the Pharmacopœia, this preparation is little different from the simple fluid extract, for which a formula has been given in the fourth class. The introduction of Dulcamara, Pipsissewa and Guaiacum is the result of an experience of twenty years in the preparation of such an extract, and competent medical testimony in favor of its efficiency.

The manner of treating the Sassafras involves but little trouble, and while it effectually communicates the properties of that aromatic, it also introduces a little alcohol, which insures the stability of the preparation.

EXTRACTUM TARAXACI FLUIDUM.

Take of Taraxacum in powder, (No. 50,) 16 ounces Troy.
Diluted Alcohol, a sufficient quantity.

Moisten the Taraxacum with four fluid ounces of diluted alcohol, pack it in a conical percolator, cover it with a disc of cloth, and pour on diluted alcohol until three pints have gradually passed. Reserve the first half pint, and evaporate the remainder at 120° Fahr., till reduced to half a pint, mix it with the reserved tincture and filter.

Fluid extract of Taraxacum may also be made from the fresh root by the following process, viz:

Take of recent Dandelion Root, (gathered in Autumn,) 24 ounces.
Alcohol, half a pint.

Bruise the root to a pulp, mix it intimately with the alcohol, and after maceration for a week express strongly and filter to get two pints of fluid extract.

Remarks.—The first formula is the "Liquor Taraxaci" of the English pharmaceutical chemists, and it is a good preparation when made in the manner described. The second formula is the "Preserved juice of Taraxacum," now in use in Philadelphia, and which merits a place in the Pharmacopœia. The object of maceration for a week is, that the cellular tissue of the root may be softened, so as to yield more freely to pressure.

EXTRACTUM GLYCYRRHIZÆ FLUIDUM.

Take of Extract of Liquorice (Calabria) eight ounces, (Troy.)
Sugar in powder, ten ounces, "
Water, a sufficient quantity.

Bruise the extract till reduced to pieces about the size of a pea, enclose it in a gauze cloth, suspend it in a pint vessel, cover it with water, let it stand 12 hours, pour off the dense liquor, renew the water, and again macerate for 12 hours. Drain the liquor from the undissolved portion of extract, mix it with the first liquid, evaporate to 12 fluid ounces, strain if necessary, dissolve in it the sugar, and evaporate till the fluid extract measures a pint.

REMARKS.—This preparation is intended to facilitate the dispensing of extract of liquorice in cough mixtures. As usually prescribed by physicians, the insoluble sediment is contained in the mixtures, and always gives them an unsightly appearance. Each fluid ounce represents half an ounce of the extract, and more than an ounce of the root. This preparation keeps pretty well, except in hot weather, but it is better not to make it in large quantity. If too long kept, carbonic acid is eliminated.

EXTRACTUM PRUNI VIRGINIANÆ FLUIDUM.

Take of Wild Cherry Bark, in powder, No. 60,	16	ounces, Troy.
Sweet Almonds,	2	"
Sugar, in powder,	12	"
Alcohol, .835,		
Water of each,	a sufficient quantity.	

Moisten the bark with four fluid ounces of alcohol, pack it in a percolator, cover it with a disc of cloth, and pour on alcohol until three pints have slowly passed. By means of a distillatory apparatus, regain two pints and a half of the alcohol. Mix the residue with half a pint of water, and evaporate it to half a pint, or until the alcohol is dissipated. Beat the almonds, without blanching, to a smooth paste with four fluid ounces of water, mix this with the extractive solution in a well stoppered bottle, and agitate occasionally for 24 hours. The contents of the bottle are then thrown on a cloth filter, strongly and quickly expressed, and if the expressed liquid does not measure 12 fluid ounces, add water to the residue and again express till sufficient is obtained. Having placed the sugar in a bottle marked for a pint, filter the expressed liquid from a close funnel into the bottle, which should be occasionally agitated, until, when the liquid has passed, and the sugar is all dissolved, the fluid extract shall measure a pint.

REMARKS.—The propriety of doubling the strength of this fluid extract, in obedience to the rule adopted of making all fluid extracts an ounce to the fluid ounce, may well be doubted, as it reduces the dose to half a teaspoonful, and requires very careful manipulation to retain all the virtues of the bark in so small a space. Nevertheless the product obtained, like that of the original formula, (Amer. Jour. Pharm. 1856,) well represents the drug, and deserves a place among the fluid extracts worthy of adoption.

EXTRACTUM KRAMERIÆ FLUIDUM.

Take of Rhatany root, in powder (60 to the inch) 16 ounces.
Sugar, 12 ounces.
Water, a sufficient quantity.

Moisten the Rhatany with half a pint of water, let it stand an hour, pack it closely in a conical percolator, cover it with a disc of cloth, and pour on water until four pints have slowly passed. Evaporate the liquor on a water bath to twelve fluid ounces, add the sugar, and continue the evaporation until the whole measures a pint, and strain.

Thus prepared, fluid extract of Rhatany is about two and a half times the strength of the officinal syrup, and affords a very elegant astringent preparation for mixtures. At first it was determined to prepare this extract by the formula for the Fluid Extract of Cinchona, and when so made it is evidently charged with the astringency of the drug, but the result is an opaque syrupy liquid, which by dilution with water gives a precipitate of apotheme. It is absolutely necessary to have the Rhatany in a uniform powder to succeed by the above recipe, so that the percolation in an unobstructed funnel shall be quite slow.

EXTRACTUM JUGLANDIS FLUIDUM.

Take of Butternut bark, finely bruised, 16 ounces,
Sugar, 12 "
Alcohol,
Water, of each, a sufficient quantity.

Mix one part of alcohol with three parts of water, put the bark in a suitable, close vessel, pour over it two pints of the diluted alcohol, and digest at a temperature not exceeding 120° for twenty-four hours, and express strongly. Return the marc to the vessel and again digest in two pints of the mixture for twelve hours, and express. Unite the liquids, evaporate them over a water bath to ten fluid ounces, filter the liquor, and dissolve in it the sugar, and strain so as to make a pint of fluid extract.

In the same manner prepare

EXTRACTUM QUASSIÆ FLUIDUM,

From Quassia, finely rasped.

REMARKS.—It would have been preferable to place Fluid

Extract of Butternut in the fourth class, and Quassia in the third class, but for the difficulty presented by their texture. Under the circumstances the above will afford a means open to all operators. With proper care the results are excellent preparations.

Oleoresinæ.

OLEORESINA CAPSICI.

Take of Capsicum, in powder, No. 50, 16 ounces,
Ether, a sufficient quantity.

Pack the Capsicum tightly in a percolator for volatile liquids, cover it with a disc of cloth, pour on the ether until two pints of fluid have passed. Put this in a retort, and by aid of a water bath distil a pint and a half of ether into a refrigerated receiver. Expose the residue in the retort, in an open capsule, till the remains of the ether have passed off, and preserve the oleoresin.

In the same manner prepare

OLEORESINA CARDAMOMI.

From Cardamom seeds, in powder. No. 50.

OLEORESINA CARYOPHYLLI.

From Cloves, in fine powder. No. 50.

OLEORESINA CUBEBÆ.

From Cubebs, in fine powder. No. 50.

OLEORESINA FILICIS MARI.

From male fern, in powder. No. 50.

OLEORESINA LUPULINÆ.

From Lupulin.

OLEORESINA PIPERIS NIGRI.

From Black Pepper, in powder. No. 50.

OLEORESINA PYRETHRI.

From Pellatory root, in powder. No. 50.

OLEORESINA SABINÆ.

From Savin, in powder. No. 50.

OLEORESINA XANTHOXYLI.

From Prickly Ash bark, in powder. No. 50.

OLEORESINA ZINGIBERIS.

From Jamaica ginger, in powder. No. 60.

REMARKS.—Of these Oleoresins, those of capsicum, cubebs, pepper, cloves, lupulin, savin and ginger, possess decided merit. That of cardamom is a liquid, consisting of one-third volatile oil and two-thirds fixed oil, with but little resinous matter. The male fern is used in Europe and occasionally here. The Xanthoxylum as used by the Eclectics is prepared by another formula. The list might be much extended but even that submitted is longer than will be accepted. The oleoresin of savin incorporates easily with resin cerate, and affords the most elegant form of savin cerate yet suggested.

In conclusion it may be again remarked, that the formulæ are all such as the Pharmaceutist may practice in the shop; they do not involve much expenditure of apparatus, and when attention is given to the division of the powders and the manipulation of the percolation as directed, the result will, it is believed, generally give satisfaction. It is quite possible that some of them by keeping a length of time will deposit sediment, the result of a disturbance in the balance of the solubilities. This may be expected, but, except in very few instances, it has no influence on the medicinal power of the extract.

It is proper before leaving the subject to extend a caution in reference to such of the above formulæ as are suggested as substitutes for the present officinal fluid extracts that differ in strength or composition from them—that they should not be used until sanctioned by authority, yet the improved manipulation may be applied where it does not alter the character of the preparations.

Philadelphia, September 4th, 1859.

ON A NEW MODE OF PREPARING SOME SYRUPS.

BY JNO. M. MAISCH.

The directions of the Pharmacopœia for a number of syrups, require an exhaustion of the crude material by diluted alcohol; the tincture is then evaporated to drive off the alcohol, the residue diluted by water, sugar is added, and heat applied to

dissolve it. To follow this process, a continued application of heat is necessary, and a prolonged contact with air unavoidable; this would make it desirable to modify the process in such a way as to dispense with evaporation as much as possible. In the following I offer such processes for the officinal syrups of rhubarb and the unofficinal syrup of blackberry root.

The Prussian and other Pharmacopœias of Europe, prepare syrup of rhubarb by macerating the root, cut into thin slices, with water containing a little carbonate of potassa in solution, then expressing the mass and dissolving the sugar in the clear liquid. Rhubarb root contains much pectin, and to the alkaline solution yields pectic acid, which is undesirable in pharmaceutical preparations, and is one of the causes of the decomposition of the similarly prepared aqueous tincture of rhubarb. But the syrup thus prepared keeps well without precipitating, and the principal fault of the process, besides the employment of an alkali, which does not add to the medicinal properties, but only imparts to the preparation a nice red color, seems to me to lie in the fact, that a single maceration in water does not extract all the virtues of the root, which retains a considerable quantity of the liquor.

The root may be completely exhausted by water, if treated in a funnel-shaped percolator in accordance with Professor I. J. Grahame's suggestions. If rhubarb root is powdered so as to pass through a sieve of fifty meshes to the linear inch, moistened sufficiently with water and packed in a funnel with slight pressure, the root will swell up in a short time to such an extent as to almost wholly prevent the passage of the liquid; if the powder has been packed very loosely, the liquid passes somewhat better, but the portion in the centre is not readily extracted. To accomplish the complete exhaustion of the root, it is necessary to mix the powdered rhubarb with about an equal bulk of fine sand, and pack it, previously moistened, with moderrate pressure into the displacer. On the addition of water, percolation commences immediately, and the first liquid is of a deep color and highly charged with the virtues of the root. Though the rhubarb soon swells considerably, the process is never impeded, but the liquid continues to pass drop by drop, each portion becoming lighter of color and less bitter in taste. If the

process has thus been conducted with care, the whole of the virtues of two ounces of rhubarb may be readily obtained in thirteen fluid ounces of an aqueous liquid, which by the addition of 24 ounces of sugar is converted into syrup of rhubarb.

Aromatic syrup of rhubarb contains several spicy ingredients, the virtues of which are not completely taken up by water alone; the difficulty in this instance is to choose a solvent for the aromatics, in order to avoid evaporation. I have adopted the following way: the rhubarb and spices in the quantity ordered in the Pharmacopœia, are reduced to powder which will pass through a sieve of fifty meshes to the inch; this is moistened with three fluid ounces of alcohol; an equal bulk of sand is now worked in, and the whole packed into a funnel. Displacement is induced by the addition of water: the liquor passing first, contains nearly the whole of the odorous matters, and the aqueous liquid which passes subsequently, produces a precipitate in it, thus rendering the whole cloudy. The percolation is continued until 3¾ pints of fluid have been obtained, in which 8 lbs. (Troy) of sugar are dissolved by means of heat. The yield is about seven pints of a strongly flavored and perfectly transparent syrup.

This process may be varied, but with no advantage that I could perceive, by keeping the first three fluid ounces of the percolated liquid separate, incorporating them with the sugar, and evaporating the alcohol spontaneously before the watery tincture is added to it. If the alcohol is not removed in this way, it can not be presumed to evaporate entirely by merely raising the whole to the boiling point; the boiling would have to be continued for some time, whereby a loss of the volatile oils may be incurred. But suppose the whole of the alcohol to remain in the syrup, one fluid ounce of it would contain scarcely over twelve minims, a quantity so insignificant as to be of no account.

Without the aid of alcohol, aromatic syrup of rhubarb may be obtained, if care is taken to have the spices deprived of their virtues by a saccharine liquid. For this purpose, the rhubarb, mixed with fine sand and moistened with water, is packed in the displacer, and upon it the aromatics previously beaten with eight ounces of sugar to powder; upon a piece of muslin placed

over the surface, water is poured until the liquid which has passed shall amount to four pints, in which 88 ounces of sugar are now dissolved by applying the requisite heat.

An aromatic syrup of blackberry root is habitually employed in various parts of the country. No formula, I think, has been published for the same, and in my own experience I have found them to vary considerably in different localities. While some boil the aromatics and the root in water, by which process all the essential oils are driven off, others make the decoction of the root into a syrup, to which they add a strong tincture made from spices with brandy; others again follow strictly the directions of the Pharmacopœia for spiced syrup of rhubarb, adding the evaporated tincture to simple syrup. A very good syrup, satisfactory in every regard, may be obtained by the following process:

Take of	Blackberry Root,	℥ii.
	Cinnamon,	
	Cloves, each	ʒiss.
	Mace,	ʒi.
	White Sugar,	℥xxx.
	Water,	a sufficient quantity.

Reduce the root and spices to a powder which will pass through a sieve of fifty meshes to the inch, moisten this with two fluid ounces of alcohol in the manner directed by Professor Grahame, and, by pouring water on the surface, continue the displacement until seventeen fluid ounces of liquor have passed; in this dissolve the sugar by the aid of heat.

Syrup of blackberry root, thus prepared, is a strong and gratefully aromatic astringent, perfectly transparent and of a pleasant taste. The dose for adults is a tablespoonful, equivalent to fifteen grains of the root.

ON ADULTERATED OIL OF PEPPERMINT.

To the Editor of the American Journal of Pharmacy:

An article of oil of peppermint has been sold in the Philadelphia market within the past fortnight, by a person claiming to be the distiller, from mint grown in the State of New York.

The oil is of a light yellow color, but considerably darker

than is usual with freshly distilled oil of mint, and presents the following characteristics: When evaporated from off a piece of white unsized paper it leaves a yellow mark. Dropped into alcohol of 95 per cent. it does not disseminate itself through the alcohol, but falls to the bottom of the glass in broken globules, and collects in a distinct stratum.

Agitation produces dissolution, but the solution is turbid, with an amount of oil which should dissolve freely. It presents no reaction with chromic acid, but when dropped on a crystal of iodine, the iodine intumesces and fumes. No such reaction is produced by a pure oil of peppermint. The density of the oil is 0·870. A recent sample of Borton's oil gave a density of 0·90. These characteristics would point to turpentine as the probable adulteration. It has been suggested by a practised distiller of oil of peppermint that the adulteration was the essential oil of fireweed (Erechthites hieracifolius.) This supposition was based on the peculiar strong smell left after most of the oil was volatilized from paper.

Recent oil of peppermint should volatilize completely from paper without leaving a mark, when dropped into alcohol of 85 per cent. it should dissolve completely without agitation.

CHARLES BULLOCK.

Philada. Oct. 12*th*, 1859.

NOTE ON COMMERCIAL CHLORIC ETHER.

BY WILLIAM PROCTER, JR.

It is a source of some inconvenience to apothecaries to know what is intended by the physician when "Chloric Ether" is prescribed. On turning to the United States Dispensatory, it informs us that a mixture of one part of Chloroform and two parts of nearly absolute alcohol is called "Strong Chloric Ether," by Dr. Warren of Boston, and used for inhalation, and that in London, and elsewhere, a weak tincture of Chloroform is sold under the name of Chloric Ether, varying in strength from 5 or 6 to 16 or 18 per cent. Dr. Thompson originally gave the name of "Chloric Ether" to the Dutch liquid ($C^4 H^4 Cl^2$). In the commerce of this country, there is a preparation that goes by

the name of Chloric Ether, consisting wholly or chiefly of chloroform and alcohol, which, when mixed with water, does not separate. On inquiring of Mr. William Weightman (of Powers & Weightman) what the article prepared by them under this name was, he stated that their firm had prepared it as they sold it for more than twenty-five years, since soon after Mr. Guthrie's discovery of chloroform, which he called Chloric Ether. The preparation sold by them is obtained by distilling together chloride of lime, alcohol and water, in the proportion of 8 lbs. *av.* of chloride of lime, to a gallon of alcohol, and a suitable quantity of water, and distilling a gallon of the "Chloric Ether." As chloride of lime, on the average, yields from 6 to 8 per-cent of chloroform, it is fair to infer that this preparation does not contain more than 8 per-cent of that substance. It has the following properties: It is colorless, has an agreeable weak odor of chloroform, a sweet spicy taste of chloroform with a cooling after impression somewhat like that of peppermint. Its specific gravity is ·892. When mixed with water in the proportion of 1 to 20 it is at first cloudy, and almost instantly becomes clear, with but little if any separation of chloroform. It is this latter property that has caused it to be preferred by some practitioners. That the proportion of chloroform in this preparation varies is quite certain, as Mr. Weightman states that it is not always of such composition as to mix with water without precipitation. It is quite inflammable, and burns with a yellowish flame, tinged with bluish green. When two fluid drachms of chloroform and fifteen fluid drachms of alcohol, (95 per cent.) are mixed, the mixture has a specific gravity approximating closely to that of the above "Chloric Ether." Such a mixture contains about 16 per cent. of chloroform, and when added to water is instantly precipitated. Whether the specific gravity of the commercial article is due partly to water, or whether the chloroform is so intimately combined with the alcohol in the process of making, as to render the mixture stable in the presence of water, has not been determined, but there is a marked difference in the behaviour of the liquids with an excess of water.

ON SYRUP OF TAR.

By Thomas A. Lancaster.

A reliable process for preparing syrup of tar has long been a desideratum.

The preparation now in use, "Tar Beer," is an excellent one when freshly prepared, but by keeping is more or less subject to decompose and become unpleasant and disagreeable to the taste, acquiring a rank odor and partially losing its medicinal properties.

This consideration led me to compile a formula as follows:—

℞ Tincturæ Picis Liquidæ,	℥ij.
Magnesiæ Carbonatis,	ʒj. or q. s.
Sacchari Albi,	℔j. av.
Aquæ Fontanæ,	a sufficient quantity.

Rub the tincture first thoroughly with the magnesia, and then add half a pint of the water gradually, transfer to a filter, and when the liquid ceases to pass add more water till it measures half a pint; then to the filtered liquid add the sugar, and by means of a gentle heat convert it into a syrup.

By the above means the pitch contained in the tincture is retained in the filter along with the magnesia, whilst the filtrate affords a syrup, by the addition of sugar, of a beautiful rich straw color, being agreeable and palatable in its taste and advantageously adapted to the most severe cases of chronic, catarrhal and bronchial affections.

In offering this formula to pharmaceutists it is with a hope that it may induce those having a demand for a reliable article to prepare it for themselves, and to attempt further improvements in the mode of preparation, as it will be seen to possess the merit of cheapness, and may be accomplished without unnecessary trouble.

The essence or tincture of tar as found in the shops was of no definite strength, but according to various samples was found of the following average: two ounces of tar to one pint of rectified alcohol.

Philadelphia, Oct. 12th, 1859.

COUMARIN FROM LIATRIS ODORATISSIMA.

By William Procter, Jr.

Early in September last I received a letter from William H. Lippitt, Pharmaceutist, of Wilmington, North Carolina, enclosing a small quantity of crystalline matter, which he had obtained from the surface of the leaves of Liatris odoratissima, collected for the purpose of preventing moths from attacking woollen clothing. Supposing it to be the active principle of the plant, he queried whether it was of value medicinally, and if so, stated that it could be procured in large quantities if required. He offered to forward a specimen, which he kindly did, by express. The plant on its arrival was not entirely dry—and portions of the surface of the leaves had turned brown, apparently from being enclosed while green. The surface of the leaves, particularly of the brown portion, was dotted over with minute, brilliant, colorless crystals, which glistened as the plant was turned about. The odor of the plant in this state was almost precisely that of Tonka bean, which at once led to the inference that the crystals were coumarin, the well known odorous principle of that seed.

Liatris odoratissima is a syngenesious plant, of the natural order Asteraceæ *Lind.*, which grows in the Southern States. Those of the species L. squarrosa or *blazing star*, L. scariosa, or *gay feather*, L. spicata, or *Button Snakeroot*, are used in medicine. The first is sometimes called "Rattlesnake's master," from its alleged antidotal power in snake bite. The root of Liatris odoratissima is perennial. That of the specimen sent is a conical bulb or corm, about an inch long and half an inch in diameter, with numerous fibres attached laterally. From the top of the root issues ten radical wedge lanceolate leaves, from six to ten inches long, and from their midst issues a reddish brown stem four feet in height, with alternate short leaf bracts and terminates in a panicle or corymb of purple flowers, which have, when chewed, a very bitter and somewhat pungent taste, but without any of the tonka bean odor or taste. Careful examination of the leaves which had dried without losing their green color, showed the crystalline exudation equally with the brown surface. The leaves, when chewed, are biting and

peppery at first, followed by a bitter taste. A portion of the crystals were placed under the microscope, and proved to consist chiefly of fragments of quadrilateral prisms, some nearly perfect. Their odor, as has been observed, was like the tonka bean, taste biting and pungent. They are but slightly soluble in cold water, more so in hot water, very soluble in alcohol, ether, and chloroform. Sulphuric acid is discolored by contact with them. Heated on foil they first melt and then sublime, apparently uncharged, and the vapors are very irritating. These are characters which, at least, ally it to coumarin, but to decide with more of certainty, it was subjected to the well determined test for coumarin, based on the action of caustic potassa. Coumarin has the formula C^{18} H^{14} O^4. When this is boiled in potassa lye, hydrogen is discharged and coumerate of potassa is formed, KO, C^{18} H^{14} O^5+HO. But when the coumarin is added to fused hydrate of potassa, abundant effervescence occurs, hydrogen and carbonic acid are eliminated, and salicylic acid is formed, which remains united with the potash. If now the result be dissolved in water, and the excess of potassa be carefully saturated with muriatic acid, the addition of sesquichloride of iron gives the well defined purple coloration of the alkaline salicylates. Tried by this test the crystals from liatris reacted satisfactorily as coumarin—and this plant may be added to the several already known as yielding this principle.

Mr. Lippitt suggests that this plant is used for preserving woollens. If it possesses this property, like camphor, its very agreeable odor will render it an object to employ it for that use.

MANNITE FROM THE ROOT OF THE LEPTANDRA VIRGINICA.

By E. S. Wayne.

Some time since, Messrs. W. S. Merrill & Co., of this city, gave me a specimen of a crystallizing substance of a dirty white color, which they informed me they had obtained as an accidental product in operating upon the residuary solution left after the precipitation of the resin of the *Leptandra*, from the alcoholic tincture of the root. The substance had a sweet taste, and was perfectly soluble in water. Cold alcohol exerted no solvent

action, save the extraction of a portion of coloring matter from it. Boiling alcohol dissolved it completely, from which it separated upon cooling, in a crystalline spongy mass of a yellow color.

The whole quantity I had (some two ounces) was then dissolved in boiling alcohol along with animal charcoal. The solution passed through the filter perfectly free from color, and the whole bulk of the filtrate upon cooling set in a mass of crystals, which were left to dry in the dish so as not to disturb or break the soft delicate crystals. In crystalline form they were identical with those of mannite, and like it, soluble in boiling alcohol, from which it separated upon cooling; had a peculiar sweet taste, and the watery solution, with the addition of yeast, after standing in a warm place for some days, exhibited no signs of fermentation. That this substance is mannite I think does not admit of a doubt, as it has its crystalline form, sweet taste, soluble in water and in boiling alcohol, from which it is deposited again upon cooling, and does not undergo fermentation when its solution, mixed with yeast, is exposed to its fermenting action.

The occurrence of mannite in vegetable infusions, or the expressed juices of roots, etc., has been before observed, particularly in that of the dandelion, by Messrs. Smith, of Edinburgh, and demonstrated by them not to exist in the original solution, but to be the result of a fermentive action upon the starchy portion of the juice, (a true lactic fermentation,) as the occurrence of mannite was always accompanied with that of lactic acid. But in the present instance, the occurrence of mannite from an alcoholic tincture of the root must be traced to a different source, as alcohol has no solvent action upon starch, or gum, consequently neither could be present in the watery solution, left after evaporating away the alcohol and the addition of water to precipitate the resin.

The only plausible supposition of the formation of mannite in this solution seems to me to be, that the root of the *Leptandra* must contain sugar, which was taken up by the alcohol along with extractive matter, which two substances, after the evaporation of the alcohol and precipitation of the resin, have been left standing exposed for some time, and have undergone a fermentation resulting in the production of mannite and lactic acid.—(*Cincinnati*) *Druggist.*

SYRUP OF IODIDE OF IRON.

By W. C. Chapman.

Although the above subject has been worn almost threadbare by the many articles which have appeared in the different journals from time to time, yet it may not be uninteresting to present to the druggist a brief statement of facts in regard to the process of forming this favorite syrup of the physician.

Having tried most of the recipes which have been given by the different authors, we have finally adopted that of Dr. Squibb, found in the Proceedings of the American Pharmaceutical Association for 1858, in which article he differs from the Pharmacopœia in using much less iron than is there directed; also, in boiling the sugar before the iodide is added. His reasons for this he explains in the following paragraph:—"In filtering the solution of the iodide into the sugar, and then shaking them till the sugar is dissolved, a bright, clear solution is rarely obtained. This arises from the circumstance that almost all sugar contains particles of dust and insoluble matters, and from the practical fact that it is almost impossible to make a bright syrup without a boiling temperature, or a most tedious filtration. Almost all sugar, within ordinary reach, contains something that renders cold made syrups more or less cloudy, and very difficult to filter."

He again differs from the officinal process in placing the point of the funnel beneath the surface of the syrup, and adding the iodide solution in small quantities, maintaining a level till all has been poured in. His reason for thus doing may be that the solution, in filtering and dropping through the air, is more liable to become chemically changed before it mingles with the syrup; which difficulty is obviated by allowing it to mix immediately with the sugar.

It has been recommended by some writers that a coil of iron wire be placed in the syrup, but this precaution is found objectionable, as the iron, after a time, becomes oxidized, thus rendering it more or less turbid, and so entirely destroying its purity and beauty.

On the 9th of last May, we prepared a quantity of the syrup after the recipe of Dr. Squibb, and put it up in vials contain-

ing two ounces each. Having seen the article by Dr. Battey, in the *Journal of Pharmacy* for that month, in regard to keeping it by means of the additional iron, we determined to give it a trial. Therefore, having coiled some pieces of iron wire as directed, we suspended them from the corks of several of the vials. Upon an examination a week or two afterwards, we found the wire coated with a film of the oxide of iron, which was being gradually disengaged, and rendering the syrup a dirty brown appearance, whilst those which were not subjected to this process, remained of their natural pale green color.

From the preceding experiments, we shall be content to prepare the syrup after Dr. Squibb's process, until a better one is produced; but would add this precaution—put the syrup into small bottles, let them be well filled, and corked tightly.—*Druggist.*

ON THE PREPARATION OF PHOSPHIDE OF CALCIUM.

By Geo. W. Andrews.

An easy and convenient method of preparing phosphide of calcium is to put into a quart crucible a sufficient quantity of well burnt lime, in pieces about the size of a nutmeg, to the depth of about two inches; then place in an upright position, resting on the lime, an iron tube about 18 inches in length and ¾ of an inch in diameter; holding the tube in its position, fill the crucible nearly to the top with lime, diminishing the size of the lumps and cover the whole with powdered lime to exclude the air.

Place the crucible in an open furnace, and bring the whole to a bright red heat, then cover the furnace with a piece of sheet-iron with a hole in the centre for the passage of the iron tube. Place in the end of the tube a piece of tinned iron bent in the form of a funnel, and drop pieces of phosphorus about two inches in length through it into the tube, by means of a pair of crucible tongs, first wiping every piece. Care should be taken to cool the tongs after each operation, by dipping them into water. If the lime is sufficiently hot, it will instantly combine with the phosphorus with only a slight flash; if not, it will be volatilized and burn at the upper end of the tube.

If the combination is found to take place upon the addition of the first piece of phosphorus, continue the addition as quickly as possible until a sufficient quantity has been added, which is indicated by the burning of the phosphorus at the mouth of the tube.

After the operation is completed, remove all the fuel from around the crucible, and let it stand until quite cold before removing the contents.

Several pounds can be made in the manner above described at one operation, by having a series of crucibles arranged in the same furnace. Four ounces of phosphorus is about the proper quantity for a pound of lime, and I have obtained from two pounds of phosphorus about nine pounds of good phosphide of calcium. Well burnt alum lime is the best; the compact variety does not answer so well.—*Jour. and Trans. of the Maryland Col. of Phar.*

NOTE ON JAPAN WAX.

For some years past occasional importations of a kind of wax have taken place indirectly from Japan, by way of China and Singapore. This wax was alluded to by Mr. Daniel Hanbury in a note to a paper published by him in the *Pharmaceutical Journal*, "On the Insect White Wax of China." Mr. Hanbury describes it as follows:—

"My specimens consist of a white wax, of somewhat rancid odor, in circular cakes of from four to four and a half inches in diameter, nearly one inch thick, flat on one side, and rounded off on the other, as if cast in a small saucer. They are sparingly covered with a white powder, and in a sample presented to me by Messrs. T. Merry and Son, present here and there traces of a sparkling crystalline efflorescence."

The fusing points of two samples which Mr. Hanbury examined were found to be respectively 125.6°, and 131° Fahr. Since the ports of Japan have been open directly to British traders, the importation of this wax has largely increased, and we now receive it no longer principally in cakes, as described above, but in large square blocks or cases, each of which averages in weight about 133 lbs. Some of it is reported to have

been sold at 70*s.* per cwt.; but the present price is too high to allow of the greater portion being disposed of.

This wax is said to be obtained from the fruits of the *Rhus succedaneum* of Linn., as a substance answering in general characters to it is stated by Kæmpfer and Thunberg to be obtained from that plant. Thunberg says:—"Oleum hujus seminum contusorum et post coctionem adhuc calentium prelo submissorum expressum, candelis conficiendis inservit et sebi concistentiam acquirit." Kæmpfer makes a similar statement, and has a figure of the plant. Good specimens of the fruit of the plant said to yield Japan Wax have been imported with the wax itself. Upon examination this fruit appears exactly to resemble that of *Rhus succedaneum, L.*, as given above, by Kæmpfer. Nevertheless, we are informed by Mr. Sowerby that upon sowing some of these fruits at the Royal Botanic Gardens, Regent's Park, the seedling plants which were obtained had serrated leaflets, whereas the *Rhus succedaneum*, as described and figured by Kæmpfer as above, are said to be *entire*. Roxburgh also says they are entire. Japan wax has also been described by Martiny as follows:

"*Cera Japonica, Japanese Wax, Tree-Wax*, incorrectly *Cera Americana, American Wax*.—Under these names there has of late times appeared in commerce a species of wax, the origin of which is at present unknown. It has been supposed by Landerer not to be of vegetable, but of animal origin, and, possibly identical with stearine (*Fettwachs*) or adipocire (*Leichenseife*.)

"To determine this, H. Müller instituted some experiments, the result of which was that the wax in question was found to be identical neither with stearine nor with beeswax; it is softer at the same temperature, and fuses at + 45° C. (=113° F.); moreover, it solidifies upon slow cooling, under similar circumstances, perceptibly more slowly; it has not the odor and tastelessness of common wax, but, on the contrary, always smells and tastes like rancid tallow; it is far more soluble in alcohol than beeswax; it is saponified by caustic alkalies, and a taper made with it burns with as bright a light as a similar one of beeswax.

"It is supposed that Japanese Wax is derived from *Rhus succedanea*, L., a tree belonging to the Natural Order *Anacardiaceæ*, a native of Japan. Candles are made in Japan from the oil of the seeds of this tree. According to Nees von Esen-

beck, the wax of *Rhus succedanea* completely resembles the Japanese Wax found in trade, and when treated with sulphuric acid its surface becomes of a reddish brown, as does that of beeswax, the acid remaining uncolored. The seeds of another Japanese tree, *Rhus vernicifera*, D. C., also contain a tallow-like oil, which is used in the making of candles.

"Japanese Wax very much resembles white wax, but it is less white, more yellowish, and in substance is more tender and crumbling, besides which, it possesses the properties we have already enumerated. It probably contains more oxygen than beeswax."

In the *Journal de Pharmacie*, for December, 1842, there will be found a paper by B. Sthamer, entitled, "Sur la composition de la Cire du Japan," containing much valuable information upon a kind of wax from Japan, which, from the description given by the author, would appear to be identical with that now imported. The author states that he undertook to investigate the subject at the desire of Liebig.

From the above evidence it is quite clear that a kind of wax is obtained in Japan from the *Rhus succedaneum* of Linn., but it is, at the same time, very probable that other plants may also yield a portion, at least, of the present wax of commerce; moreover, this wax, in some of its characteristics, so strongly resembles beeswax, that we can scarcely believe that it is altogether of vegetable origin. Mr. P. L. Simmonds, in the *China Telegraph*, gives the following account of Japan Wax:—

"*Rhus succedanea*, the species which furnishes the Japan Wax, has long been grown in our greenhouses, having been introduced from China nearly a century ago. It might be raised, we should suppose, in the Cape and Australian colonies, in the Mauritius, and India, and would be far preferable as an oleaginous plant to the species of candle-berry myrtles from which wax is obtained. It will grow in any common soil, and may be readily increased by cuttings. We shall probably soon learn what is the ordinary mode of culture in the plantations of Japan, and whether any attention is paid to manuring, pruning, &c. The wax is of medium quality, between beeswax and the ordinary vegetable tallows, such as Bassia butter, Borneo vegetable tallows, Cocum butter, &c. Though there are shades of differ-

ence, several of these varieties of wax possess the essential properties of that formed by the bee; indeed, it was formerly supposed that bees merely collected the wax already formed by the vegetable; but Huber's experiments show that the insect has the power of transmuting sugar into wax, and that it is in fact a secretion. Japan Wax is softer, more brittle, and fatty than beeswax, easily kneaded, and melts between 40° and 42° C. It contains twice as much oxygen as beeswax, and has a different composition, consisting of palmitic acid, united with oxide of glyceryle. The small parcels which formerly reached this country have been used in Price's Patent Candle Works, in substitution for wax, and for hard neutral fat, and, after conversion into the acid state, both for candles and night-lights. If the wholesale price can be reduced, this wax will find its way into extensive consumption on the Continent for various purposes."
—*Lon. Pharm. Jour. and Trans. Sept.* 1859.

PREPARATION OF OPIUM IN FRANCE.

M. Roux, Professor of Botany at the Naval School of Rochefort, has just sent in an interesting paper to the Academy of Science on the cultivation of the poppy in France for the purpose of extracting opium. His first researches on this subject date from 1851, but were more especially continued by him during 1856, 1857, and 1858, on eight different kinds of poppy. His results are stated as follows:—1. The Indian poppy furnishes a considerable quantity both of opium and seed; the cultivation of this vigorous species might be tried in those departments of France where the oil of the black garden poppy is a staple produce. The Indian poppy may be easily acclimatized in France. A quantity sown in October, 1857, has succeeded perfectly, and the young plants resisted a cold of 10 degrees centigrade (18 degrees below Fahrenheit's freezing point) in the following winter. This cold proved equally harmless to the white, black, and red species, which were sown about the same time. 2. The two latter produce the best opium, and juice is much richer in morphine than is the case with the opiums of commerce. 3. A man can collect 100 grammes of opium in fifteen hours; and if women and children, who are so often in

want of employment in the country districts, were employed on this task, the opium necessary for medical purposes might be entirely grown in France. 4. The growing of opium might become very profitable in France, where poppy-oil is manufactured to the amount of from 25,000,000f. to 30,000,000f., and where it would, consequently, be easy to add a new branch to that trade by the extraction of opium; and it might even, in course of time, become an article of exportation. Home-grown opium has been tried, at M. Roux's request, by M. Duval, first chief Navy Surgeon at Brest, and found to answer very well, owing to the qantity of morphine it contains.—*Lon. Pharm. Journ. Aug.* 1859.

ON THE DETERMINATION OF QUINIA IN PERUVIAN BARK.

By R. Kleist, Chief Apothecary of the Staff.

One ounce of the bark in coarse powder is digested for 24 hours at 112° F., and this is repeated four times, or until thoroughly exhausted, with water containing in 17 ounces 4 scruples of muriatic acid; the first time 5, every other time 4 oz. of the acidulated water being employed. The clear liquors are precipitated by caustic soda; the precipitate is after two hours re dissolved in muriatic acid to entirely separate the cinchotannic acid,* heated, and after cooling, the tannin* is separated by filtration, the filtrate is precipitated by caustic soda, the precipitate collected upon a filter, the moisture pressed out between folds of bibulous paper, and, while still moist, together with the filter put in a wide mouth (opodeldoc) vial; it is then repeatedly shaken with chloroform until completely exhausted, so that a little of the last portion when evaporated upon a glass plate leaves no stain behind. To avoid loss, the chloroform solution is not filtered off, but decanted from the sediment, and then evaporated in a small dish which has been carefully tared, when the cinchona alkaloids remain behind.

By the experiments made with many different kinds of Peruvian bark, it has been ascertained, that in all cases, if the

*Instead of tannin, coloring matter or cinchona red appears thus to be separated.

chloroform solution be transparent and leave a yellow-reddish transparent resinous mass, this consists of quinia, and the bark is the true Calisaya (China regia), either quilled, flat, with or without epidermis; the latter usually yielded 18 grains of quinia, the former only between 9 and 12 grs. But if the solution of chloroform is rendered white and cloudy, and the residue after evaporation is white or white-yellowish pulverulent, the bark is of another kind which contains less quinia, this being in a smaller proportion, the more the residue approaches in appearance to pulverized lime. The bark contains no quinia if the brown precipitate is soluble neither in chloroform, ether or alcohol; it yields then no alkaloid by combining with muriatic acid and precipitating.

Among 75 samples sold as Calisaya bark, it was by the above method ascertained that 34 were true Calisaya bark, while in 41 cases, other inferior barks had been substituted for it.—*Archiv d. deutsch. Med. Gesetzgeb.*—*Wittstein's V. Schr.* vii. 584—587. J. M. M.

A NEW VEHICLE FOR IODINE.

Dr. Heller, and before him Arneth, Pelikan and Zdekauer, has made the observation, that as long as the color of the ointment of iodide of potassium is white, not a trace of iodine is found in the urine, which is the case after it has turned yellow, and contains free iodine; he concludes that preparations of iodine for external use must be more active if they contain free iodine. Tincture of iodine, after a continued use for some time, has various disadvantages, and Dr. Heller has therefore tried to employ it in a solution in oil of juniper.

The solution of iodine in the oil must be effected with great care by introducing it gradually in small quantities into the oil to avoid explosion. The solution at first is brown, but gradually decolorizes and corresponds with the formula $C_{20} H_{12} I_4$. It shows no reaction on starch, has no odor of iodine, but smells of juniper berries, and does not color or destroy the skin. After its use, iodine is found in the urine, the saliva and the mucus of the nose.—*Zeitsch. d. Wiener Aerzte.* 1858.—*Wittstein's V. Schr.* viii. 462. J. M. M.

Query: Does not the colorless solution contain the iodine in a combined state, and is not therefore the assertion that for external applications iodine ought to be uncombined, premature and unfounded? J. M. M.

ON THE WATER OF CRYSTALLIZATION AND THE FUSING POINT OF QUINIA.

By R. Kiessling.

The statements on these subjects are very defective and contradictory. Liebig states that air-dry quinia loses at 120° C., (248° F.) 14.2 per ct.= 3 equiv .water, and that it fuses easily to an oily liquid, which on cooling congeals to a transparent mass. According to Limpricht, quinia with 3HO fuses at 120° C. to an oily liquid. In Hartung-Schwarzkopf's Chemistry of the Organic Alkaloids, it is related that the flocculent and the crystallized quinia contain 1 equiv. water, which escapes at a moderate heat in the water bath, after which the crystals fall to a white powder; quinia fuses at about 150° C. to an oily liquid.

The author prepared some quinia from the sulphate; the air-dry alkaloid was exposed to a heat of 212° F., when it lost 3·925 per ct.; from 212 to 302° it sustained a farther loss of 1·925 per ct. No further loss occurred on heating to 392°; the whole loss was therefore 5·830 per ct. or 2·003 per ct. of the alkaloid dried at 212°. Quinia= C_{20} H_{12} NO_2 + 3HO contains in 100 parts 63·49 C, 6·35 H, 7·41 N, 8·46 O, 14·29 HO. The loss below 302° would therefore be a little over 1 equiv. But from the amount of nitrogen found by analysis, the author concludes, that quinia dried at 212° contains 3HO and that the loss sustained by the alkaloid on heating, is occasioned by hygroscopic water. The author obtained 7·160 per ct. nitrogen.* The loss of weight at a higher temperature, the author ascribes to a slight volatilization of quinia.

Quinia is rendered soft at a temperature between 80 and 90° C., (176—194° F.;) in three experiments the author has found

*This statement appears to require further investigation, as the analyses of Liebig, Regnault, Laurent and Strecker are all at direct variance with it. See Amer. Jour. Pharm, xxvii. page 242.

the fusing point at 189°, 195° and 205° C., and concludes that it is at a much higher temperature than has hitherto been supposed, in the neighborhood of 200° C. (392° F.)—*Wittstein's Viert. Schr.* viii. 338—340. J. M. M.

ON THE THERAPEUTIC PRORERTIES OF SARSAPARILLA.

By Prof. Bocker, of Bonn.

Dr. A. M. Adam, in some interesting *Medical Notes from the Continent*, refers to some experiments by Prof. Böcker upon sarsaparilla, as yet unpublished. Dr. Böcher told Dr. Adam, "that after carefully performing ninety-eight experiments with this drug on healthy people, he found that, contrary to all our usually received opinions on the subject, it possesses neither diuretic nor diaphoretic properties. Another series of twenty-six experiments, on the persons of uncured syphilitic patients, gave exactly the same results. Böcker also satisfied himself that sarza does not increase the efficacy of the agents, such as iod. potass., &c., which are usually given along with it; and that the good results obtained by the administration of this salt, dissolved in decoction of sarza, are in no degree attributable to any virtue in the solvent fluid. I told Dr. Böcker that I remembered hearing Professor Syme, many years ago, express his opinion on the utter uselessness of so expensive a drug as sarza, remarking, in his own quaint, forcible style, that he believed an 'infusion of hay' would be just as good, and a vast deal cheaper. He seemed amused, and said that he entirely agreed with Syme; that infusion of sarza had no greater effect on the system than so much common tea; and that we must regard it merely as a pleasant, but very expensive, vehicle for the administration of other medicines.—*Edinburgh Medical Journal.*

PERMANENT PURPLE OR LILAC DYE.

Several correspondents having applied for information respecting the purple dye which is now so extensively used for giving to silks, &c., the different shades of purple or *mauve*, we give the following extract from the Specification of Mr. Perkin's patent,

which describes the process for producing and applying the dye:—

"I take a cold solution of sulphate of aniline, or a cold solution of sulphate of toluidine, or a cold solution of sulphate xylidine, or a cold solution of sulphate of cumidine, or a mixture of any one of such solutions with any others or other of them, and as much of a cold solution of a soluble bichromate as contains base enough to convert the sulphuric acid in any of the above-mentioned solutions into a neutral sulphate. I then mix the solutions, and allow them to stand for ten or twelve hours, when the mixture will consist of a black powder and a solution of a neutral sulphate. I then throw this mixture upon a fine filter, and wash it with water till free from the neutral sulphate. I then dry the substance thus obtained at a temperature of 100° centigrade, or 212° Fahrenheit, and digest it repeatedly with coal-tar naphtha, until it is free from a brown substance which is extracted by the naphtha. Any other substance than coal-tar naphtha may be used in which the brown substance is soluble and the coloring matter is not soluble. I then free the residue from the naphtha by evaporation, and digest it with methylated spirit, or any other liquid in which the coloring matter is soluble, which dissolves out the new coloring matter. I then separate the methylated spirit from the coloring matter by distillation, at a temperature of 100° centrigrade, or 212° Fahrenheit.

"To produce the lilac or purple color in the material to be dyed, I add a strong solution of the coloring matter (preferring an alcoholic solution) to a dilute boiling solution of tartaric acid or oxalic acid, and work the silk, cotton, or other material through it when cold.

"For dyeing wool it is found advantageous to boil the wool with the above solution and sulphate of iron, to rinse it in water, and afterwards wash it in soap and water."

The colors produced by the use of this new dyeing material are not only very delicate and beautiful, but they are permanent when exposed to light. The same colors when produced, as heretofore, from vegetable dyes, were extremely fugitive; so much so, indeed, that linendrapers rarely exposed fabrics of such colors in their windows.—*Lon. Pharm. Jour. Aug.* 1859.

ANALYSES OF VARIOUS KINDS OF PORCELAIN.

By Joseph Müller.

The porcelain used for these analytical investigations was freed from its glazing, which with thicker pieces was easily effected by wrapping them in paper, and striking them with a hammer; for the thinner pieces the use of the knife, chisel and file was found necessary. On powdering it in an iron mortar, much iron was rubbed off, which made it requisite to digest the powder with diluted muriatic acid; after washing, it was triturated to a very fine powder in an agate mortar, and ignited. A part of the powder thus treated was fused with carbonate of lime and chloride of ammonium for the determination of the alkalies; for the other ingredients, another portion was treated with carbonate of soda and potassa.

I. is porcelain from Meissen, II. from Elgersburg, III. from Dallwitz in Bohemia, IV. gives the result of Vielguth's analysis of Nymphenburg, V. Wilson's analysis of Berlin porcelain.

	I.	II.	III.	IV.	V.
Silicic acid	60·033	72·77	74·798	72·80	71·340
Sulphuric acid	——	·06	·087	——	——
Sesquioxide of iron	trace	trace	——	2·50	1·743
Alumina	35·435	24·53	21·303	18·40	23·763
Magnesia	trace	trace	trace	·30	·192
Lime	·577	——	·639	3·30	·568
Soda	1·547	1·61	·584	1·84	——
Potassa	2·264	·94	2·484	·65	2·001
	99·856	99·91	99·895	99·79	99·607

Wittstein's Viert. Schr. viii. 352—354. J. M. M.

ON THE EXAMINATION OF INDIGO.

By Joseph Müller, of Prague.

The chemical determination of the commercial value of indigo is very important, because, on account of the high price, it is subject to various adulterations which are not detected, and may not be suspected by the physical properties, the color, lustre, gravity, shape, &c. The best chemical test, for the use of empirics especially, is the method first proposed by Pugh, and improved by Berzelius, which consists in the reaction of protosul-

phate of iron and lime with indigo, by which the coloring matter is deoxidized and dissolved; if now precipitated by muriatic acid, the pure coloring matter may be dried and weighed. It takes about two days to finish this analysis, but the whole of the coloring matter is not obtainable in this way.

Professor Runge has lately proposed protoxide of tin and potassa for deoxidation, but besides the necessity of preparing the test fresh every time immediately before its use, the reduction takes place but partially, even if the reaction be allowed to continue for weeks.

The author now proposes grape-sugar and potassa as reagents for effecting the reduction, and thinks that they will realize all just expectations. The mode of proceeding is as follows: 10 grains of finely powdered indigo, 30 grs. dry caustic potassa, and 60 grs. grape-sugar, together with two drachms of water, are moderately heated in a sand bath; in a few moments a reaction is observed, the color changes ultimately to a yellow green, and a few movements with the pestle are now sufficient to rub all into a fine powder. This is now washed into an ordinary prescription vial, the weight of which, together with the well-fitting cork, has been previously ascertained, the vial is nearly filled with water, corked and weighed, and occasionally shaken until the froth has lost its blue or green color and become pale yellow, which usually takes place on the second day. After settling, all the clear liquid is decanted, and the weight of the residue ascertained, which contains the impurities of indigo, consisting of clay, lime, magnesia, oxide of iron, silica, &c.

The decanted liquid, which in contact with the air turns blue instantly, is over-saturated with diluted sulphuric or muriatic acid, the precipitate is collected upon a filter, between which and the funnel another filter of the same size and weight is placed, to be used as a counterpoise, and is afterwards washed until the filtrate ceases to redden litmus paper, when it is dried in a warm place and weighed. Now, suppose the weight of the whole contents of the vial to have been 1620 grains, of the residue after decantation 161·5 grs. of the decanted liquid 1620—161.5= 1458.5, and of the blue coloring matter 5.59 grains; the 10 grs.

of indigo then contain $\frac{5.59 \times 1620}{1458.5} = 6.21$ grs. of available coloring blue, or 62.1 per cent. of the weight of the crude article.*

Berzelius' reduction test, for the same indigo, indicated only 12·81 per ct.; nearly four-fifths of the color had consequently entered into an insoluble compound with lime and was lost. The author claims for his method, therefore, not only relative, but absolute results in determining the commercial value of indigo; he likewise thinks it advantageous to employ for dyeing, instead of sulphate of iron and lime, impure grape-sugar and caustic potassa, which might be cheaply prepared from wood ashes with burned lime. The higher price of the material would be more than fully compensated for by the increased yield of the pure dyeing matter.

The author has also examined the products of decomposition of grape-sugar. The deep brown liquid remaining after precipitating the indigo blue, was neutralized by potassa, evaporated, freed from the crystallizing sulphate of potassa, the residue treated with strong alcohol, then dissolved in water, decomposed by acetate of baryta, and filtered. A few drops of solution of sugar of lead, precipitated the humus-like substances; the filtrate yielded with acetate of lead a voluminous pale yellow precipitate which in composition agreed with Bödecker and Struckmann's gallactinate of lead. Basic acetate of lead now produced a deep yellow precipitate, which, after decomposition by sulphuretted hydrogen, and digestion with carbonate of baryta, yielded a salt, corresponding to pectolactinate of baryta. Bödecker and Struckmann's formula (Ann. d. Chem. und Pharm. C. 265) for gallactinic acid is $C_{14} H_3 O_7 + 2 HO$, and for pectolactinic acid $C_{16} H_6 O_{10} + 2 HO$.

Kiessling states, that the products obtained by the decomposition of chloride of silver by grape-sugar and potassa are likewise identical with these acids.—*Wittstein's Viertelj. Schrift* viii. 325—331.) J. M. M.

*No notice is here taken of the weight of impurities, which ought to be deducted from the weight of the whole before calculation; but even 50 per ct. impurities would not influence the result more than about ·2 per ct. of the real coloring matter, if that point of the author's directions is observed, to decant the *whole clear liquid*, so as to leave as little as possible behind.

EXAMINATION OF POTATO AND RYE WHISKEY.

By S. J. Kappel.

I. The potato whiskey was colorless, of the known disagreeable odor, had a faintly acid reaction, and at 60° F. a specific gravity of ·930 = 53 per ct. by measure of absolute alcohol. A few drops of solution of potassa were added to about half an ounce of the whiskey, the whole was evaporated by a moderate heat, and, after cooling, an excess of sulphuric acid was added. Immediately a cheesy odor of valerianic acid was evolved, which soon after gave place to a persistent odor of fusel oil.

The acid reaction of whiskey is usually attributed to the presence of acetic acid, generated from the alcohol by oxidation from the air during the process of fermentation; the oxidation of fusel oil (amylic alcohol) to valerianic acid is analogous to the former, and might evidently take place under similar circumstances. To determine the quantity of acid, and whether any was present besides the valerianic, 1500 grains of the whiskey were digested with carbonate of baryta in excess until the acid reaction had ceased, the filtrate was then decomposed by sulphuric acid; the precipitate, after washing and igniting, weighed ·7456 grains. The filtrate was neutralized with potassa, evaporated to a small amount, then distilled with an excess of sulphuric acid; the distillate had the odor of pure valerianic acid; it was nearly neutralized with potassa, and slowly evaporated to dryness. The saline residue had the sweet taste of the alkaline valerianates, and on decomposition by sulphuric acid, a pure valerianic odor without any acetic smell was given off. The acid of the whiskey, therefore, is valerianic acid only, and from the sulphate of baryta (equivalent = 116.7) the quantity of valerianic acid (C_{10} H_9 O_3 = 93) is calculated 116.7 : 93 = ·7456 : ·595 grains, which in 100 parts of whiskey corresponds with ·0397 per ct. of valerianic acid.

By evaporation, ignition, treating with nitric acid, ammonia and potassa successively, copper was detected, yielding ·00184 per cent. oxide of copper.

II. The rye whiskey was slightly yellowish, acid and contained 52 per ct. absolute alcohol. Treated as above, no acetic, but .08125 per ct. valerianic acid was detected. The small quan-

tity of ashes contained no copper, but traces of iron, recognized by sulphocyanuret of potassium.—*Wittstein's Viertelj. Schr.* viii. 340—343). J. M. M.

ON THE CONSTITUTION OF SCAMMONY.

By Franz Keller.

The author has previously stated that scammony is a glucoside, and, continuing his investigations upon this body, has found that the products of decomposition which he obtained from the resin were not pure substances; he has now obtained definite products of decomposition in the following ways:—

1. *Decomposition of the Resin by Acids.*—If a solution of the resin, not too dilute, which has been repeatedly purified by animal charcoal, be mixed with an equal volume of English sulphuric acid or supersaturated with muriatic acid gas, the whole of the resin is completely decomposed in the course of about 8 days. If it be then diluted with water, fatty crystalline scales separate; these unite in flakes, rise to the surface, and subsequently contract into a shining crystalline film, the individual crystals of which belong to the clinorhombic system. The flocculent body obtained by the addition of water was collected on a filter, and washed with water. It then usually appears of a dazzling whiteness, and when dried forms a scaly laminar mass, like cholesterine. It is fused again in very dilute solution of potash, and then repeatedly in water, by which means a coarsely radiate mass is obtained, which is insoluble in water, but readily soluble in alcohol, on the evaporation of which it shoots into large, brittle, transparent laminar crystals of the abovementioned system. These have at first scarcely any taste, but gradually produce an unpleasant sensation in the throat. The alcoholic solution has a perfectly neutral reaction. When fused upon water, the crystals flow into an oil of a slightly yellowish color, which solidifies at 80°—82° F., forming a brittle crystalline mass with a shining surface, which appears composed of large laminæ, especially when slowly cooled. The analysis of this body gave:—

C	73·39	73·57	73·63	28 = 168		73·68
H	12·48	12·55	12·42	28	28	12·28
O	14·13	13·88	13·95	4	32	14·04

If this neutral body be dissolved in solution of potash, the potash-salt of an acid produced from it is obtained. This separates, on the addition of sulphuric acid, in white flakes, which unite to form oily drops when heated; on cooling, these appear as a beautifully satiny mass. The alcoholic solution has a decidedly acid reaction.

The crystals obtained from the alcoholic solution are less lustrous, and consist of needles grouped like wavellite round a central point, which are also formed by the fused acid on cooling. The melting point was found to be 140—142° F. The acid produced by potash from the first-mentioned neutral body, and separated by sulphuric acid, was dissolved in alcohol with the addition of an excess of ammonia; and this solution was precipitated by nitrate of silver. The flocculent precipitate obtained gave on analysis

C	49·39	49·26	30	100	49·58
H	7·89	8·09	27	27	7·43
O	..	..	6	48	13·24
Ag	29·33	29·62	1	108	29·75

The analysis of the free acid gave

C	70·28	70·01	30	180	70·31
H	11·13	12·00	28	28	10·93
O	18·59	17·99	6	48	18·76

Consequently the neutral body has the composition $C^{28} H^{28} O^4$, and would be isomeric with the aldehyde of œnanthylic acid. The acid produced therefrom by potash would have the formulæ $C^{30} H^{28} O^6$.

The author now found that in dissolving the neutral body in potash a volatile body escapes, which may be distilled off from the solution and collected in a receiver; this volatile body proved to be an alcohol of the formula $C^{26} H^{28} O^2$. This alcohol is best obtained directly by the treatment of scammony in its alcoholic solution with potash, as follows:—

2. *Decomposition of the Resin by Potash.*—If fragments of hydrate of potash be added to the colorless, building, alcoholic solution of the resin, this immediately acquires a yellow color. When the boiling is continued, the fluid becomes turbid with separation of dark flakes, which only dissolve with difficulty in boiling alcohol, are precipitated again on cooling, and can be

completely separated by a further addition of alcohol. The supernatant clear fluid, when mixed with much water, separates an abundance of flakes, which may readily be collected; and this flocculent body is nothing but the volatile alcohol just mentioned.

The remaining alcoholic fluid contains valerianate of potash.

To obtain the above mentioned alcohol in a pure state, the alcoholic fluid obtained from the decomposition of the resin, which is still rich in potash, is put into a retort, when the alcohol is distilled off and replaced with water. When the last traces of alcohol have passed over, the wall of the retort becomes coated with a thin fatty layer, which gradually passes into the ascending tube, and then into the refrigerating tube, from which it issues in the form of a gelatinous stopper. In order to prepare larger quantities, it is better to employ the resin itself, distilling it in very spacious retorts with solution of potash not too concentrated.

The formation of this body also takes place with baryta-water.

If the masses of the volatile body be fused upon water, they flow into a perfectly clear oleaginous stratum, which, on cooling, exhibits a very delicate crystalline structure. The melting-point in the capillary tube, employing two glasses standing one within the other, was found to be exactly 104° F., which is also the point of solidification. Analysis gave:—

C	77·95	78·06	26 = 156		78
H	14·08	14·15	28	28	14
O	7·97	7·79	2	15	8

As this volatile alcohol is produced from the neutral body $C^{28} H^{28} O^4$, which the author regards as allied to the aldehydes, the formation of the acid first described and of the alcohol is as follows:—

$$2 (C^{28} H^{28} O^4) = C^{26} H^{28} O^6.$$

London Chem. Gaz. from Liebig's *Annalen*, cix. p. 209.

ON CITRON CONTAMINATED WITH COPPER.

Bauwens, jun., of Ghent, has found that citron (succade, confectio citri) is often contaminated with copper; of six samples, ob-

tained from different sources, not one was free of copper. The presence of copper is easily proven; citron is cut into small pieces and put into water containing some acetic acid; the bright blade of a knife is then immersed in it, and soon becomes covered with a reddish film. Citron containing copper assumes a brownish red color when thrown into a solution of ferrocyanuret of potassium.

It does not admit of any doubt that the copper is derived from the vessels in which the citron is prepared; this is effected in the following way: the large fruit of Citrus medica, *Risso*, and Citrus decumana, *L.*, are plucked before they are fully ripe, cut lengthwise into two or four pieces, and after the removal of the pulpy interior, are distilled with water from a copper kettle, to gain the volatile oil which is sold under the name of "huile de cedrat." The action of the free fruit acid on the copper can be hardly prevented, particularly if the kettle had not been kept in a bright state, but had become covered with oxide. After the volatile oil has been distilled off, a certain quantity of sugar is added to the thin residue containing the pieces of the fruits, and the excess of water is evaporated.—*Journal de Pharm. d'Anvers*, 1859, 37.—*Wittstein's Viert. Schr.* viii. 451.)

ON SOME PRINCIPLES OF CONVALLARIA MAJALIS.

By G. F. Walz.

Some time ago, the author analyzed the lily of the valley; in the N. Jahrbuch f. Pharm. 1858, x. 145, he published his investigations of the two most important constituents—the *convallarin*, a crystalline acrid principle, and the *convallamarin*, which is pulverulent and bitter.

Preparation. The herb, together with the root, is collected before or after flowering, dried, coarsely powdered, exhausted by alcohol of ·840 spec. grav., the green filtrates are precipitated by subacetate of lead, the dissolved lead removed by sulphuretted hydrogen and the clear filtrate is distilled in the waterbath to regain the alcohol. The residue separates, on cooling, a mass of crystals, mixed with chlorophyl, resin, &c.; after collecting them on a filter, they are pressed and treated with ether, which leaves

most of the crystals behind. The ethereal solution yields more crystals on evaporation, but mixed with a syrupy liquid, from which they may be liberated either by digesting with water, agitating the separated resin with ether, dissolving the insoluble residue in alcohol, digesting with animal charcoal, filtering and evaporating; or the acid reaction of the syrup is neutralized by soda, the liquid evaporated and the residue treated with ether, then with water, and at last with alcohol, which latter solution, after being decolorized by animal charcoal, is evaporated.

The aqueous solution obtained by any one of the above methods is decolorized by animal charcoal, precipitated by a watery solution of tannic acid, and the precipitate, after filtering and expressing, is digested with alcohol; the tincture is now treated with hydrated lime, filtered, and distilled to one half. Carbonic acid is passed through the residue to precipitate the excess of lime, the liquid is evaporated and the dry mass digested with ether. To obtain the bitter principle in a perfectly pure state, it must be redissolved in water and treated as before.

Properties. Convallarin crystallizes in colorless rectangular prisms, is scarcely soluble in water, but sufficiently to impart to it its acrid taste, and to foam like soap water when shaken. It is easily soluble in alcohol, which solution produces an intensely acrid sensation in the throat, and is rendered turbid by water and ether. If heated to 312° F., it remains unaltered, but it fuses at a higher temperature and is decomposed. It dissolves in ammonia and is deposited again on evaporation; potassa dissolves and decomposes it; concentrated mineral acids dissolve it, and yield with water a flocculent precipitate which is now soluble in ether.

The composition of convallarin is C_{34} H_{31} O_{11}. By digestion with diluted acids, sugar is procured and a new body *convallaretin* C_{28} H_{26} O_6, which is soluble in ether, yellowish white, crystalline and of a resinous taste.

Convallamarin is a white powder, of a very bitter, subsequently sweetish taste, soluble in water and alcohol, not in ether; it dissolves in ammonia without decomposition, but is decomposed by potassa. The moist powder is colored violet by concentrated sulphuric acid, which color disappears by the addition of water,

which is rendered turbid. Nitric and muriatic acid yield a yellow solution, which is precipitated by water. The aqueous solution is precipitated by protonitrate of mercury, and by tannin; sesquichloride of iron and bichloride of platinum occasion a slight turbidity.

Its composition is expressed by $C_{46}\ H_{44}\ O_{24}$. Dilute acids decompose it into sugar and *convallamaretin* $C_{40}\ H_{36}\ O_{16}$, which is a yellowish white crystalline powder, of a faint resinous taste. It is worthy of note that convallamaretin, minus one half of an equivalent of sugar $C_6\ H_5\ O_5$, gives the composition of the acrid principle convallarin.—*Wittstein's Viert. Schrift.* viii. 259—262.

J. M. M.

Varieties.

A new Disinfectant for Dressing Putrid Sores and Ulcers.—Considerable discussion has recently taken place in the French Academy, respecting a new preparation, introduced by MM. Demeaux and Corne, for dressing and disinfecting putrid sores and ulcers. It consists of a mixture of one hundred parts of commercial plaster of Paris in very fine powder, and from one to three parts of coal tar. This mixture forms a powder of a more or less greyish color, and a slightly bituminous odor. For application, it may also be made into a paste with olive oil, which binds the powder together without destroying its absorptive power. The following are the properties of this substance, as described by the above gentlemen:—A gangrenous sore, with an abundant fetid suppuration, treated with this dressing, is immediately freed from all disagreeable odor, and the bandages, even after 24 or 36 hours, exhale no more odor than if taken from a simple fracture. An ulcerated cancer producing a fetid serous suppuration, dressed with this substance is entirely deprived of odor as long as the dressing remains on. So also the linen saturated with pus, cataplasms impregnated with the suppuration, &c., placed in contact with this substance lose all their disagreeable odor; the infectious liquid produced by gangrene, clots of decomposed blood, tissues in a state of advanced putrefaction, treated with this substance are immediately disinfected. Its action appears to be to arrest the work of decomposition; it removes the insects, and prevents the production of maggots. The consistence acquired, either by the powder alone or the paste with oil, does not cause the least pain to the patient, or harm to the sore. Its application may be indirect or direct, the latter produces no harm, but rather exercises a detersive action favor-

able to cicatrization. This dressing has the double power of disinfecting the pus and other morbid products, and of absorbing them; the last circumstance is of the greatest importance, because it enables the use of lint to be dispensed with. Fifty kilogrammes of this powder may be made in Paris for one franc. M. Velpeau, at the Hôpital de la Charite, and several other French Surgeons have employed this preparation with great success, and speak very highly of its disinfecting properties. Mr. Crace Calvert, of Manchester, has addressed a letter to the French Academy, in reference to this subject, pointing out the great variation which exists in the composition of coal tar, and the consequent necessity for more accurately ascertaining to which of the constituents the disinfecting properties are really due, in order to ensure the uniform action of the preparation. From the results of his own experiments he considers that the antiseptic properties of the tar are entirely due to the carbolic acid present. He states, that a corpse injected with a weak solution of this acid, was preserved from decomposition for several weeks; and that a piece of flesh steeped in carbolic acid, was exposed to the air for three years without change. He also states, that a small quantity added to urine will preserve it from decomposition for some weeks; and that it is also capable of preventing the gallic fermentation from taking place in the solutions of tanning substances.—*London Pharm. Journal.*

Glycerine Ointment for the Itch.—M. Bourguignon, so well known in Paris by his successful researches on "the acarus scabiei," has published in the *Gazette Medicale* the following formula. One general friction, not preceded by soap ablutions is sufficient: Yelks of two eggs; essence of lavender, lemon, and mint, of each 120 drops; gum tragacanth, half a drachm; well pounded sulphur, twenty-six drachms; glycerine, thirty-two drachms. Total weight, nearly eleven ounces. Mix the essence with the yelk of egg, add the gum tragacanth, make a good mucilage, and then add very gradually the glycerine and sulphur. Many cures have been obtained by this preparation, which has the advantage of giving no pain. The well-known Helmeric ointment being really useful, M. Bourguignon has modified it, and substituted glycerine for the axunge. In the altered form the preparation is not any dearer, as efficacious, and less painful than the original ointment. It does not grease the clothes, and has an agreeable perfume. Gum tragacanth, fifteen grains; carbonate of potash, thirteen drachms; well pounded sulphur, twenty-six drachms; glycerine, fifty-two drachms; essences of lavender, lemon, mint, cloves, and cinnamon, of each fifteen drops. Total weight, nearly eleven ounces: make a mucil age with the gum and one ounce of glycerine, add the carbonate, mix until it is dissolved, and then gradually add the sulphur and glycerine; lastly, pour in the essences. With this compound, M. Bourguignon advises two general frictions of half an hour, within twelve hours of each other, and followed, twenty-four hours afterwards, by a simple warm bath, as the

glycerine is soluble in water. Two-thirds of the preparation should be used for the first friction, the other third for the second.—*Ibid, from Lancet.*

Poisoning by Strychnia given in place of Santonine.—Dr. Simons, of Alken, in Belgium, has just had the misfortune of seeing a child of seven years perish, to whom he had given santonine (as he thought) as a vermifuge. On examination of the bottle from which the powders had been prepared, it was found that, though labelled santonine by M. Degheest, the wholesale druggist who had delivered the bottle, the latter contained a powder composed of one-sixth of santonine and five-sixths of strychnine. The Court before whom this sad affair was brought decided that the heaviest penalty should be inflicted upon M. Degheest and his assistant, as their warehouses were found in a most irregular and dangerous state as regards poisonous substances. Dr. Simons, though evidently guiltless, was lightly fined, as, according to the letter of the law, he was bound to examine and test the medicinal substances he received from the wholesale druggist. It is, however, perfectly plain to every one, that the busy country practitioner cannot find time for such investigation, besides not being accustomed to the necessary manipulations.—*Ibid, from Dub. Med. Press.*

Minutes of the Philadelphia College of Pharmacy.

At the Semi-Annual Meeting held 9th mo. 27th, 1859, present twenty members. The President, Charles Ellis, in the Chair.

The Minutes of the College were adopted, and those of the Trustees were read.

Alfred W. Test was elected to membership.

A. A. B. Durand resigned his membership, having retired from the pharmaceutical profession.

The Committee on the proposed change in the laws in relation to Annual Contributions, recommended making no change at present.

The Committee on Sinking Fund reported that the ground rent had been paid off and the property of the College mortgaged for three thousand dollars, as directed by the Special Meeting, held in the Spring. This is the only debt of the College.

The Delegates to the American Pharmaceutical Association reported that they all attended, with the exception of one; the vacancy they filled by the appointment of Samuel S. Bunting, who was in attendance. Nine members of this College were present at the meeting.

The Association assembled in Boston, at the Rooms of the Massachusetts College of Pharmacy, on the afternoon of the 13th inst., and continued its session during the 14th, 15th, and 16th inst.

The meeting was well attended by delegates representing Boston, New

York, Philadelphia, Baltimore, Washington and Chicago, and by numerous other members. One gentleman was in attendance from Tennessee, one from St. Paul, Minnesota, and the 3d Vice President, Dr. Battey, from Georgia.

A large number of members were in attendance from the New England States, and much interest in the affairs of the Association seemed to be awakened in that section.

During the past year over one hundred and thirty new members have been added to the Association. A number of papers of great interest were read, which will duly appear in the transactions.

The Massachusets College of Pharmacy placed ample conveniences at the disposal of the Association to transact their business in a satisfactory and comfortable manner. The members from a distance were treated with great courtesy and attention, and the delegates from this College will long remember the attention received at the hands of their Boston friends.

Signed on behalf of the Delegates, CHARLES BULLOCK.

The subject of subscribing toward the publication of the Proceedings of the American Pharmaceutical Association being introduced, the College was informed that the income of the Association, arising from the annual subscriptions of its members, was likely to prove insufficient to publish a sufficient edition of the voluminous Proceedings in *extenso*, and to give them the circulation which their interest and importance demand, and on motion the subject was referred to the attention of the Board of Trustees.

The Committee on Obituary Notices introduced the following, which were directed to be entered on the Minutes:

Departed this life on the 12th of June last, aged 49 years, Hon. Jacob Bell, of London, one of the honorary members of this College, and for many years President of the London Pharmaceutical Society. The name of Jacob Bell has been so long connected with the history of Pharmaceutical progress in Great Britain, and his death has been the subject of so much comment in the London Pharmaceutical Journal, of which he was editor, and in our own and other scientific journals, that we have felt any notice beyond an official record of the loss sustained by our profession to be uncalled for in this place.

Frederick Klett, one of the original members of this College, and a member from its foundation till his decease, died on the 26th of July, 1859, aged 64 years. He commenced business in December, 1818, at the corner of Second and Callowhill streets, and continued in the same location till January, 1855, when he sold out his interest and retired from business. Since 1845 he was American Consul for the kingdom of Wurtemburg in Germany. He was an active and enterprising business man, and was much respected in this community during his long business career.

In accordance with resolutions adopted at the last Annual Meeting, the College balloted for Delegates to the Pharmacopœial Convention of 1860. William Procter, Jr., Edward Parrish and A. B. Taylor were duly elected.

The Semi-Annual Election resulted in the choice of the following:

For Trustees.

T. P. James,	S. S. Garrigues.	E. T. Ellis,
A. B. Taylor,	W. J. Jenks,	Chas. Bullock,
Jacob L. Smith,	Dr. W. H. Pile.	

To fill vacancy occasioned by the resignation of F. C. Hill,
James T. Shinn.

Committee on Obituary Notices.

Edward Parrish,	W. Procter, Jr.,	C. Bullock.

Then adjourned,

EDWARD PARRISH, *Secretary.*

Editorial Department.

THE BOSTON MEETING.—The Meeting of the American Pharmaceutical Association in September was a decided success, not only was it the largest gathering that has yet occurred under the auspices of the Association, but the amount of results in the shape of reports and original papers will exceed that of any previous Meeting. The large space occupied by the Minutes of that Meeting in this number, renders comment on the details unnecessary. It has been the aim of the Editor to give a connected account of the proceedings of each meeting as nearly correct as it is possible to get it, so as to embody a history of this great movement as it progresses. A good way of judging of the nature of such a meeting is to examine its elements—to observe the character and standing of the men who engage in it. When it is found that pharmaceutists and druggists, whose time, pecuniarily speaking, is very valuable, and who in addition are willing to pay the expenses for travelling and hotel fare, and avoid the pleasures incident to a large city to attend three sessions a day, something more than curiosity must prompt them to the act; and it is but fair to infer that they feel a deep interest in the advancement of Pharmacy as a scientific art, and in its professional relations. The Meeting was characterized by good feeling throughout, a large accession of new members was gained, and much labor pointed out and accepted for the Meeting next year. Our Boston brethren, in their arrangements for the accommodation of the Meeting, deserve great praise, and in reverting to the occasion we can suggest nothing to alter in the comforts and facilities afforded. The

provision of a large additional room for the exhibition of specimens and of a room for committees should not be passed unnoticed.

Each member of the Association was presented with a map of Boston and its vicinity, with explanatory matter, prepared expressly for the occasion, all handsomely done up in pocket map style; and the outside influence of the Massachusetts College was felt in various other ways, in facilities for visiting objects of interest, and by invitations to places of instruction and amusement. It should not be forgotten that a number of members were accompanied by their wives, who, it might have been supposed, would have had a dull time while their husbands were engaged at the Meeting. Not so—a Committee of Boston ladies, provided with ways and means, enabled the ladies of members to visit various interesting objects in the city and vicinity, so that they really came away better posted on subjects usually sought out by travellers than did their husbands.

As regards the entertainment given in honor of the Association by gentlemen of the Massachusetts College, at the American House, it is sufficient to say that in abundance and excellence of material, and genuine expression of good feeling, it was all that could be desired by those who are favorable to this mode of exhibiting hospitality to strangers; and, although but one of a minority, we cannot but take this occasion to express a hope that such costly demonstrations will cease to be an accompaniment of our Annual Meeting.

Wild Cherry Pastils. Correction.—Our subscribers are requested, on reading this paragraph, to turn to page 22 of the January number of this volume, and in the formula for "Wild Cherry Pastils," by William R. Warner, insert after the line "Pulv. Acaciæ," the words "Pulv. Sacchari ℥xv." (Troy). The line was omitted accidentally, and without it the formula requires a calculation to get at the amount of sugar needed.

Botanical and Pharmacological Enquiries and Desiderata.—The reception of the pamphlet, embodying these inquiries, issued under the direction of Sir William Hooker and Mr. Hanbury, is acknowledged from the latter, and in our next issue will be noticed in the way desired.

John M. Maisch.—By a circular received from this gentleman, we are informed that he has "assumed the position of Superintendent of the practical department of Parrish's School of Pharmacy." Besides giving instruction in practical pharmacy, Mr. Maisch proposes to open a *Laboratory for Practical and Analytical Chemistry*, designed in particular for the wants of pharmaceutists and physicians. From our knowledge of Mr. Maisch we believe that his instructions will prove valuable to his patrons. The Laboratory is located at 800 Arch street (Philadelphia), above the drug store of Edward Parrish.

An Introduction to Practical Pharmacy:—Designed as a text-book for the Student, and a guide for the Physician and Pharmaceutist. With many Formulas and Prescriptions. By Edward Parrish, Graduate in Pharmacy, &c. Second Edition, greatly enlarged and improved, with 246 Illustrations. Philadelphia. Blanchard & Lea, 1859, pp. 720.

The first edition of this book was noticed in vol. 28, page 10 of this Journal. The demand for a second edition, after so short a lapse of time, is unmistakable evidence that the book has met the approval of those to whom it has been addressed—physicians and pharmaceutists. This success has stimulated the author to increased zeal in its revision, and after considerable investigation and research, the present edition embodies the improvements which have resulted. It would have been preferable to have devoted the time and labor necessary to a close inspection of this work for the present number, but the late period at which it was placed in our hands, and the preparation of the index to this volume, are sufficient excuse for avoiding at present a critical notice of the "Introduction to Practical Pharmacy," which could only be based on a careful examination of the whole details of the book. While in every part the author gives evidence that he has revised the pages, it is the 3d and 4th parts that will be found to have received the greatest extension. The former of these, "Pharmacy in its relations to organic Chemistry," is a fruitful theme, and the author has embraced many details in it not found in the first edition. His system of *syllabi*, by which a bird's eye view of each class is given, is here much extended, and affords a useful aid to the Student in comprehending the subjects. In the chapter on Formulæ and on Extemporaneous Pharmacy we observe many additions, and in the latter a set of rules and regulations for the shop, which if carried out in letter and spirit would reform the practices of numerous Pharmaceutical establishments. It is our intention to recur to this book again under circumstances more favorable to estimate its merit as "a text book for the student," and as "a guide for the physician and pharmaceutist," but meanwhile we feel no hesitation in saying that the author has made it an exceedingly valuable compend of practical information needed by the pharmaceutist and country practitioner; and illustrated as it is at every step with figures, the beginner will find it easily understood.

A Manual of Scientific and Practical Agriculture for the School and Farm. By J. L. Campbell, A. M., Prof. of Physical Science in Washington College, Virginia, with numerous illustrations. Philadelphia. Lindsay & Blakiston, 1859, pp. 442, 12mo.

This volume is replete with valuable information in regard to the elements of agricultural chemistry, in its bearing on soils, manures, culture and maturation of crops, rotation of crops, etc. The writer, though at present a teacher of science, is not unused to practical agriculture, and evi-

dently brings to his task considerable personal observation and experience. The book, as its name and size indicate, is written as a manual for students and young farmers. The observations on crops have a more especial reference to Southern staples, including tobacco and cotton. The cereal grains and the pulses and grasses are also treated of. Each chapter is concluded with a series of questions bearing on the text, and rendering it a fit text book for agricultural classes. The author is evidently in favor of a better system of agriculture than usually is carried out at the South, and his book is calculated to do good among a class of young men, sons of planters, who are too apt to ignore the applications of scientific agriculture, and pursue the old beaten track of their fathers.

The work is well printed and bound, and deserves the attention of farmers and others.

The Chemist and Druggist, a Monthly Trade Circular, London, Sept. 15th, Vol. I, No. 1, pp. 68, is the title of an advertising journal just issued in London, and extensively circulated, almost wholly devoted to business advertisements, and sent post-paid in England for 62½ cts. per annum.

Obituary.—Prof. Henfrey, of London, died on the 7th of September, in the 39th year of his age. He was a botanist of considerable eminence, occupying the Chair of Botany in King's College, London, and the author of various papers on his favorite science.

Dr. Thomas Nuttall, formerly of Philadelphia, died at his residence, Nutgrove, Lancashire, England, on the 10th of September, in the 73d year of his age. He was born in Yorkshire, brought up a printer, emigrated to this country near the close of the 18th century, and subsequently devoted himself to botany, geology, ornithology, &c. He travelled much—visited California and Oregon, wrote several works, and among them the supplementary volumes to Michaux's North American Sylva. A few years since a relative bequeathed him a considerable estate, on condition of his spending nine months of every year in England.

INDEX.

TO VOL. XXXI. (VOL. VII. THIRD SERIES) OF THE AMERICAN JOURNAL OF PHARMACY.

Abel, Joseph, on citrate of iron and strychnia.....127
Acetic acid converted into methylic alcohol.....172
Acetic fluid extracts.....538
Acetate of lead, preparation of basic.....280
Acrid principle of Ranunculus sceleratus.....440
Action of bichromate of potassa in dyeing.....131
Action of nitric ether on iodide of potassium.....438
Adelheid spring water.....458
Adulterated oil of peppermint.....552
Adulteration of cream of tartar.....486
Adulteration of otto of rose.....335
Adulteration of valerianate of iron.....482
Aiken, Prof. Wm. E. A., on althæa paper as a test for acids and alkalies.....367
" " " examination of a spurious opium.....374
Ailanthus glandulosa, vermifuge properties of.....229
Albright, A., on the adelheid spring of Bavaria.....458
Alcohol as a solvent of all medicinal principles.....43
Alcoholic fermentation, new researches on.....72
Allen, Harvey, on podophyllin.....206
Allopathic sugar pellets.....20
Althæa paper as a test for acids and alkalies.....367
Alum in china.....69
Ambergris.....183
American dispensatory of Dr. King.....285, 384
American Pharmaceutical Association.....383
American Pharmaceutical Association, call of the meeting of.....382, 483
American Pharmaceutical Association, minutes of the meeting of 1859.....491
American Pharmaceutical Association, officers of, for 1859.....497
Ammonia, new source of.....430
Amounts of sulphuretted hydrogen and hydrocyanic acid in tobacco smoke 76
Anagallis arvensis, observations on.....299
Analysis of the root of Bryonia alba.....349
Analysis of Daphne mezereum flowers.....351
Analysis of the root of Arum maculatum.....351
Analysis of highland cutweed kelp.....461
Analysis of various kinds of porcelain.....570

Andrews, Thomas, note on azone.....463
Andrews, G. W., on the preparation of phosphide of calcium.....560
Anhydrous sulphuric acid, preparation of.....439
Animal bread of the Mexicans, Hautlé or.....74
Annatto, culture and preparation of.....360
Anthon, E. F., new method of preparing sulphurous acid.....353
Anthemin and anthemic acid,.....470
Apparatus for pharmaceutical purposes, steam.....223
Argenti nitras fusus.....49
Aromatic syrup of blackberry root.....552
Arum maculatum, analysis of.....351
Atropia, valerianate of.....150

Bannvart, Charles, pharmaceutical notices.....18
Baryta, its industrial applications.....136
Baryta, manufacture of the sulphate of.....451
Battey, Dr. Robert, on liquor ferri iodidi.....205
Behavior of boracic to tartaric acid.....241
Berthelot, M., on melezitose, a new sugar.....61
" " on the camphenic series.....73
Bell, Jacob, notice of the late.....488
Bibliographical notices.....92, 94, 191
Bernouilli, Dr. J. J., on the weight of drops.....441
Bichromate of potassa, its action in dyeing.....131
Binocular vision.....82
Binoxystrychnia.....134
Bitter wine of iron.....450
Bixa orellana, culture of for annatto.....360
Blockey, John S., and *Herbert Sugden* on the action of bichromate of potassa in dyeing.....131
Bocker, Prof., of Bonn, on the therapeutic properties of sarsaparilla.....568
Boussingault, on the relations of the soil to vegetation.....468
Botany Bay kino.....226
Brandy, preparation of Catawba.....363
Bryonia alba, analysis of.....249
Bryonin.....249
Bryonetin.....249
Bryoretin.....251
Brunner, C., on the preparation of platinum black.....344
" " on the preparation of molybdate of ammonia.....348
Buchu, fluid extract of.....313, 349, 582
Buckalew, C. R., Letter in reference to the cinchona tree.....475
Bullock, Charles, on mercury and its oxides and acetates.....268
" " on an adulteration of cream of tartar.....486
" " on adulterated oil of peppermint.....552

Callman, H., on crystallized valerianate of atropia.....150
Camphenic series.....73

Cameron, Charles A., on urea as a direct source of nitrogen to plants.....157
Canella bark, on a red.....346
Canouil, M., chemical matches, &c.....150
Canouil's processes for manufacturing chemical matches.....468
Carapa touloucouna.....231
Caraya amara, bark of, as a medicine.....33
Carbonate of ammonia for poisoned bites.....184
Carney, Charles T., on the solubility of sesqui-oxide of chrominum.....128
" " report on the adulterations of drugs.....502
Carrie, M., on the preparation of liquid tartrate of potassa, ammonia and iron.....257
Catawba Brandy, preparation of.....384, 363
Catalogue of the Class of the Philadelphia College of Pharmacy, 1858–9.....95
Catalogue of the Library of the Philadelphia College of Pharmacy.....291
Caspari, Charles, on oxide of zinc.....435
Caucassian insect powder.....373
Chapman, Wm. C., on syrup of iodide of iron.....559
Chemical matches without phosphorus.....150
Chemical characters of otto of rose.....338
Chickweed, observations on.....299
Chloroform, on the tests of its purity.....148
Chlorinated lunar caustic.....238, 477
Chloride of zinc, saponification of fats by.....431
Chloric ether, on commercial.....553
Cicuta virosa, volatile oil of the seeds of.....251
Cimicifuga, acetic tincture of.....483
Citrate of iron and strychnia.....23, 127
Citromel of iodide of iron.....64
Citron contaminated with coffee.....576
Cinchona bark, assay of.....426
Cinchona, its introduction into India.....429
Cinchona tree, the.....475
Cinnamodendron corticosum.....347
Clöez & Guignet on permanganate of potassa.....278
" " on the conversion of nitrogen of nitrogenous matters into nitrate of potassa.....151
Claus, Dr. C., of Dorpat, on the history of pharmacy in Russia.....165
Cobalt, preparation of metallic.....433
Coffee, citron contaminated with.....576
Colocynth.....331
Colocynthin.....331
Colocynthitin.....331
Colocynthein.....332
Commercial chloric ether.....553
Commercial history of otto of rose.....252
Combustibility of powdered iron.....254
Conversion of nitrogen into nitrate of potassa.....151
Conversion of acetic acid into methylic alcohol.....172

Contamination of distilled waters with tin.....254
Concussions in boiling prevented.....348
Constitution of solania.....417
Constitution of scammony.....574
Convallaria majalis, on some principles of.....577
Convallarin.....577
Convallamarin.....577
Convallamaretin.....579
Convallaretin.....578
Coral, its rate of growth.....185
Coumarin from Liatris odoratissima.....556
Cream of tartar, adulterated.....486
Crystallized valerianate of atropia.....150
Culture of peppermint in Michigan.....35
Culture of Bixa orellana for annatto.....360
Cutweed kelp, analysis of.....458
Cyanide of potassium, poisoning by.....482

Daniell, Dr. W. F., on red canella bark from the West Indies.....346
Daphne mezereum, analysis of the flowers of.....351
De Vrij, Dr., on iodide of ethyle.....170
Death of Humboldt.....392
Dangerous explosion of muriatic acid.....479
Densimeter, a new.....135
Dental anæsthetic.....480
Detection of iodine in urine.....350
Determination of tallow and stearic acid in wax.....417
Determination of quinia in Peruvian bark.....365
Dentifrice.....232
Disinfectant, on a new.....579
Displacement use of the funnel in.....327
Displacement or percolation.....317
Distillation of oil of peppermint.....39
Distilled waters, contamination of, with tin.....254
Dr. Edward R. Squibb.....186
Druggist, the, a new pharmaceutical journal.....288
Drops, the weight of.....441

Editorial department.....86, 186, 284, 383, 484, 583
Eichler, William, on melampyrit.....365
Elixir cinchonæ.....18
Elixir of citro-lactate of iron.....416
Employment of permanganate of potassa as an oxidizing agent.....78
Enz, J. B., an analysis of the flowers of Daphne mezereum.....351
" " analysis of the root of Arum maculatum.....351
Erdmann, O. L., on the acrid principle of Ranunculus sceleratus.....440
" " on hæmatoxylin.....453
Essence of scurvy-grass.....416

Essential oil of valerian.....414
Estimation of organic matters in the air of cities, &c.....444
Ethereal oil of horse chestnuts.....231
Ethereal oil of elemi.....424
Eucalyptus resinifera, on the kino of.....226
Eulenburg, Dr., on a new remedy for hydrophobia.....345
Evaporation of water from beneath an oily liquid.....372
Examination of potato and rye whiskey.....573
Examination of a spurious opium.....374
Extract of colocynth.....20
Extractum aconiti foliorum fluidum.....532
Extractum aconiti radicis fluidum.....533
Extractum aromaticæ fluidum.....540
Extractum belladonnæ fluidum.....532
Extractum buchu fluidum.....532
Extractum capsici fluidum.....539
Extractum canellæ fluidum.....539
Extractum cardamomi fluidum.....539
Extractum caryophylli fluidum.....539
Extractum chimaphilæ fluidum.....539
Extractum chiraytæ fluidum.....536
Extractum cimicifugæ fluidum.....534
Extractum cinchonæ fluidum.....536
Extractum cinnamomi fluidum.....539
Extractum colchici radicis fluidum.....534
Extractum colombæ fluidum.....534
Extractum conii fluidum.....538
Extractum cubebæ fluidum.....539
Extractum digitalis fluidum.....532
Extractum dulcamaræ fluidum.....536
Extractum ergotæ fluidum.....538
Extractum eupatorii fluidum.....535
Extractum ferri pomatum.....26
Extractum gallæ fluidum.....536
Extractum gentianæ fluidum.....535
Extractum geranii fluidum.....536
Extractum glycyrrhizæ fluidum.....545
Extractum granati fluidum.....537
Extractum hellebori fluidum.....534
Extractum hyoscyami fluidum.....582
Extractum inulæ fluidum.....539
Extractum iridis florentinæ fluidum.....539
Extractum ipecacuanhæ fluidum.....534
Extractum jalapæ fluidum.....534
Extractum juglandis fluidum.....547
Extractum krameriæ fluidum.....547
Extractum lobeliæ fluidum.....538

Extractum lupulinæ fluidum 539
Extractum matico fluidum 532
Extractum myrrhæ fluidum 539
Extractum podophylli fluidum 534
Extractum pimentæ fluidum 539
Extractum pyrethri fluidum 539
Extractum pruni virginianæ fluidum 546
Extractum quassiæ fluidum 547
Extractum rhei fluidum 541
Extractum rhei et potassæ fluidum 389
Extractum rhei et sennæ fluidum 543
Extractum rubi fluidum 557
Extractum sanguinariæ fluidum 534
Extractum sarsaparillæ fluidum 537
Extractum sarsaparillæ fluidum compositum 544
Extractum scillæ fluidum 535
Extractum senegæ fluidum 535
Extractum serpentariæ fluidum 535
Extractum sennæ fluidum 542
Extractum spigeliæ fluidum 537
Extractum spigeliæ et sennæ fluidum 542
Extractum stramonii fluidum 532
Extractum taraxaci fluidum 545
Extractum uva ursi fluidum 537
Extractum valerianæ fluidum 532
Extractum veratri viridis fluidum 534
Extractum xanthoxyli fluidum 539
Extractum zingiberis fluidum 539
Extracts, most correct method of making. 233
Extracts, preservation of fluid 113, 216

Facts in relation to the solubility of phosphate of iron 410
Ferri iodidum 52
Ferrated tincture of bark 147
Ferrein, A., on the yellow coloring matter of autumnal leaves 352
Fire weed in peppermint plantations 38
Flach, M., on the contamination of distilled waters with tin. 254
Fluid extract of buchu 313, 349, 532
Fluid extract of cimicifugæ 313, 534
Fluid extract of serpentariæ 314, 535
Fluid extract of valerian 314, 379, 532
Fluid extract of yarrow 437
Fluid extracts, preservation of 113
Fluid extracts, proper menstruum for 305
Formation of cyanide of potassium in smoking belladonna 415
Formulæ for the fluid extracts in reference to their more general adoption in the Pharmacopœia 530
Formation of gum tragacanth 161, 243
Friedel, C., on the conversion of acetic acid into methylic alcohol 172

Freestone of extraordinary strength.....183
Funnels in displacement, use of.....327

Garrod, Dr. A. B., report on McAndrew & Son's scammony.....274
Gaultheria procumbens.....31
Gaudenet, M., on the preservation of photographs on paper.....279
Geisler, M., on the essence of scurvy-grass.....416
Geith E., on the determination of tallow or stearic acid in wax.....417
Ginseng excitement.....480
Gleanings from the French Journals.....229, 410
Glycerin water.....18
Glycerole of lead.....442
Glycerin ointment for the itch.....580
Gmelin, M. Otto, on the constitution of solania.....417
Gobley, M., on vanillin, the odorous principle of vanilla.....130
Grahame, Israel J., on syrup of ipecacuanha.....143
" " on fluid extract of buchu.....349
" " on the process of percolation or displacement.....354
" " on fluid extract of valerian.....379
" " on mel rosæ.....443
Gratiola officinalis.....340
Gratiolin.....340
Gratiosolin.....341
Gratiolacrin.....341
Guerin-Menneville, M., on the animal bread of the Mexicans.....74
Guillermond, M., on the assay of Peruvian bark.....426
Gum tragacanth.....161, 243
Growth of coral, rate of the.....185

Hæmatoxylin.....453
Hairs of the urticaceæ.....184
Hanbury, Daniel, on otto of roses.....333
Heintzleman, Joseph Aug., on Anagallis arvensis.....299
Headland, on the action of medicines on the system.....487
Heinitsh, Charles A., on citrate of iron and strychnia.....23
Hemlock pitch as produced in Michigan.....28
Hemlock oil as produced in Michigan.....29
Henry, A., on iron reduced by carbon.....129
Hetet, Prof., on the vermifuge properties of Ailanthus glandulosa.....329
Hewson, F. C. E., on the preservation of timber.....174
Hofmann, Dr., on iodonitrate of silver.....456
Horncastle, John, on citromel and tartromel of iodide of iron.....64
Horsechestnuts, ethereal oil of.....231
Hupp, J. C., M. D., on the therapeutic uses of protein.....402
Hydrargyri iodidum.....57, 203
Hydrargyri iodidum rubrum.....58, 409
Hydrocyanic acid in tobacco smoke.....76
Hydrobryotin.....251
Hyoscyamus, saltpetre in.....402
Hypophosphites of quinia.....285

Industrial application of baryta.....136
Infusions.....376
Inquiries into the formation of gum tragacanth.....161, 243
Introduction of cinchonia into India.....429
Investigation of strychnia.....133
Iodo-nitrate of silver.....456
Iodo-bromine water of Heilbrunn in Bavaria.....458
Iodide of ethyle.....170
Iodide of iron, syrup of.....54, 215
Iodide of iron, syrup of.....559
Insect powder.....373
Iodine, testing nitric acid and nitrate of soda for.....170
Iodine, a new vehicle for.....566
Ipecacuanha, syrup of.....143
Iron reduced by carbon.....129
Iron, syrup of iodide of.....54, 215, 559
Iron, pyrophosphate of, soluble.....248

Japan wax, note on.....561
Journal and Transactions of the Maryland College of Pharmacy.....287
Juice of Eucalytus resinifera.....226
Juices of rhubarb-stalks, tomatoes and quinces, acids in the.....193
Juncadella, E., on the action of nitric ether upon iodide of potassium.....438

Kappel, S. J. Examination of potato and rye whiskey.....573
Kelp, analysis of cutweed.....458
Kino of Eucalyptus resinifera.....225
Keller, Franz, on the constitution of scammony.....574
Keissling, R., on the water of crystallization and fusing point of quinia.....567
Kleist, R., on the determination of quinia in Peruvian bark.....565
Kraft & Tessié du Mottay, on the saponification of fats by chloride of zinc...436
Kuhlmann, F., on the industrial applications of baryta.....136

Lancaster, Thomas A., on the acids of rhubarb stalks tomatoes and quinces..193
" " on syrup of tar.....555
Landerer, Dr. X., on the detection of iodine in the urine.....350
Lamont, John, on an analysis of Highland cutweed kelp.....438
Le Conte, John, observations on the species of nicotina.....471
Leaves of the wild cherry tree.....423
Leptandra virginica, mannite from.....557
Liatris odoratissima, coumarin from.....556
Library of the Philadelphia College of Pharmacy.....284
Lilac dye, a permanent.....568
Linimentum caoutchouci.....389
Linimentum succini compositum.....390
Liquor arsenici et hydrargyri iodidi.....410
Liquor ferri iodidi.....54, 205, 409, 559

List of graduates of the Philadelphia College of Pharmacy for 1859.....281
List of subjects for investigation by members of the American Pharmaceutical Association for 1860 523
Lotio hydrastis composita.....390
Lunar caustic, chlorinated.....238

Macgowan, Dr., on alum in China..... 69
Mackay, Mr., on the commerce of otto of roses.....252
Mahla, Dr. F., on nitro-benzole.....200
" " on the preparation and detection of nitrobenzole.....202
" " on saltpetre in hyoscyamus.....402
Maisch, John M., on extractum ferri pomatum..... 26
" " on the preservation of fluid extracts.....113
" " on the new system of German weights.....207
" " on the proper menstruum for fluid extracts.....305
" " notes on fluid extracts of buchu, cimicifuga serpentaria and valerian.....312
" " on the solubility of phosphate of iron.....410
" " on a new mode of preparing some syrups.....557
Manufacture of acetic, tartaric and citric acids.....140
Manufacture of chromic and hydroferrocyanic acids.....142
Manufacture of oil of roses at Kisanlik.....324
Manufacture of sulphate of baryta.....451
Mannite from Leptandra virginica..... 557
Mannkoff, Dr. Emil, on the ethereal oil of elemi.....424
Martin, Stanislaus, on the preservation and distillation of roses and orange flowers.....258
Mayer, Fred. F., on Prussian blue or hydrocyanate of iron.....395
Medical convention for revising the Pharmacopœia.....283
Medicine in India.....184
Meeting of the American Pharmaceutical Association.....484
Melampyrit.....365
Mel rosæ.....443
Melezitose, a new sugar..... 61
Mercury, its oxides and acetates.....260
Mercury, its black oxide of.....261
Mercury, red oxide of.....264
Mercury, acetate of.....265
Merrill, William S., on the solubility of medicinal principles in alcohol..... 43
Microscopist's companion.....391
Minutes of the Pharmaceutical Meetings..... 84
Minutes of the Philadelphia College of Pharmacy.....280, 581
Miscellaneous chemical observations.....308
Mistura chenopodii comp.....390
Morphiæ sulphas..... 59
Mode of preparing liquids of specific gravity.....135
Mohl, Hugo Von, on gum tragacanth.....243
Morrison the hygeist.....183

Molybdate of ammonia, preparation of.....248
Monsel's persulphate of iron.....403
Müller, Gustav, on the quantitative determination of tannin.....427

Nature of scammony and turpeth resin.....377
New act of Parliament regulating medicine.....189
New British Pharmacopœia.....189
New disinfectant for dressing putrid ulcers.....579
New German System of weights.....207
New mode of making suppositories.....231
New method of preparing sulphurous acid.....353
New mode of preparing some syrups.....549
New remedy for hydrophobia.....345
New researches on alcoholic fermentation..... 72
New vehicle for iodine.....566
Nichols, J. R., on steam apparatus for pharmaceutical purposes.....223
Nicotiana fruticosa.....471
Nicotiana rustica.....472
Nicotiana tabacum.....473
Nitro benzole.....200
Nitrate of potassa, its formation from nitrogenous substances.....151
Nitrate of silver, iodide and.....456
Noodt, Dr., on the Caucassian insect powder.....373
Note on the kino of Eucalyptus resinifera.....226
Note on commercial chloric ether.....552
Note on Japan wax.....561
Note on ozone.....463

Obituary.—Soubeiran.....191
Obituary.—Prof. Wm. Tully.....288
Obituary.—J. L. Lassaigne.....288
Obituary.—Humboldt.....392
Obituary.—Jacob Bell.....488
Obituary.—Prof. Henfrey.....586
Obituary.—Dr. Thomas Nuttall.....586
Observations on the acids of rhubarb stalks, tomatoes and quinces.....193
Observations on Anagallis arvensis.....299
Oil of fireweed..... 38
Oil of geranium, history of.....336
Oil of ground-nuts.....415
Oil of hemlock, production of..... 29
Oil of peppermint, adulterated.....552
Oil of valerian, researches on.....414
Oiled paper a substitute for oiled silk in surgery.....272
Oily solution of oleate of binoxide of mercury.....415
Oleoresina capsici.....548
Oleoresina cardamomi.....548

Oleoresina cubebæ....548
Oleoresina caryophylli....548
Oleoresina felicis maris....548
Oleoresina Lupulinæ....548
Oleoresina piperis nigri....548
Oleoresina pyrethri....548
Oleoresina sabinæ....548
Oleoresina xanthyoxyli....548
Oleoresina zingiberis....548
Oleoresins....548
Oleoresinous fluid extracts....539
Opium, examination of a spurious....374
Opium in France, preparation of....564
Orange-flowers, preservation of....258
Osann, M., on the preparation of anhydrous sulphuric acid....439
Otto of rose, production of....333
Otto of rose at Kisanlik, manufacture of....324
Otto of rose, adulteration of....335
Otto of roses....252
Oxystrychnia....134
Ozone, note on....463

Parisian wash powder....478
Parrish, Edward, Pharmaceutical notes of travel....1, 97, 209
" " on the use of funnels in displacement....327
Parrish's Practical Pharmacy, notice of....
Pasteur, M., on alcoholic fermentation.... 72
Peat gas....280
Peckolt, Theodore, of Cantagallo, on the culture of annatto....360
Pelouze, J., on the manufacture of sulphate of baryta....457
Peppermint, adulterated oil of....552
Peppermint plantations of Michigan.... 33
Pepsin wine....185
Percolation or displacement....317
Permanganate of potash as an oxidizing agent.... 78
Persulphate of iron, Monsel's....403
Pharmacy in Russia, history of....165
Pharmaceutical notes of travel by E. Parrish....1, 97, 209
Pharmaceutical notices....18, 409
Pharmaceutical statistics of Saxony....330
Pharmaceutical Society of Great Britain....485
Photoglyphic engraving....478
Phosphide of calcium....560
Physicians' Visiting List....487
Pierlot's, M., researches on oil of valerian....414
Plummer & Kelly, on the solubility of strychnia.... 24
Plummer, Dr. John F., miscellaneous chemical observations....308

Platinum black, preparation of.....344
Potato whiskey.....573
Poisonous properties of the ethereal oil of elemi.....424
Poisonous effects of the leaves of the yew tree.....479
Poisoning by cyanide of potassium.....482
Poisoning by strychnia admixed with santonin.....581
Podophyllin.....19, 206
Powder to roll pills in..... 18
Powdered blue mass.....270
Practical observations on preserving timber.....174
Practical observations on the preservation and distillation of roses and orange flowers.....258
Preparation of metallic cobalt.....433
Preparation of anhydrous sulphuric acid.....439
Preparation of phosphide of calcium.....560
Preparation of pure sulphates..... 64
Preparation of nitrobenzole.....202
Preparation of Rochelle salts.....256
Preparation of liquid tartrate of ammonia, potassa and peroxide of iron.....257
Preparation of basic acetate of lead.....280
Preparation of platinum black.....344
Preparation of molybdate of ammonia.....348
Preparation of opium in France.....564
Preservation of fluid extracts.....113, 216
Preservation of animal and vegetable substances.....156
Preparing extracts, best methods for.....233
Process of percolation or displacement.....354
Process for assaying quinia in cinchona bark.....426
Proceedings of the American Pharmaceutical Association for 1858..... 88
Procter, Jr., William, Remarks on propylamin.....125
" " Note on propylamin.....222
" " On the kino of Eucalyptus resinifera.....226
" " On percolation or displacement.....317
" " Remarks on persulphate of iron.....403
" " Note on the solubility of phosphate of iron.....413
" " On the leaves of wild cherry bark.....423
" " On formulæ for the fluid extracts with reference to the next Pharmacopœia.....530
" " On commercial chloric ether.....553
" " Coumarin in Liatris odoratissima.....556
Production of otto of rose.....333
Prohibition of empyrical preparations in Russia.....483
Proper menstruum for the fluid extracts.....305
Protein, therapeutical applications of.....402
Prussian blue or hydrocyanate of iron.....395
Propylamin, notes on.....125, 222
Pyrophosphate of iron, on soluble.....249

Purgative and vermifuge biscuits....414
Purple and lilac dye....568

Quantitative determination of tannin....427
Quinby *vs.* Eckstein....187
Quinces, on the acids of....198
Quinia, assay of Peruvian bark of....426

Ranunculus sceleratus, acrid principle of....440
Rebling, M., on the preparation of Rochelle salt....256
Red canella bark from the West Indies....346
Relations between fermentation and crystallization....273
Relations of the soil to vegetation....468
Remarks on the preparation and uses of Catawba brandy....363
Remarks on Monsel's persulphate of iron....403
Remarks on spiritus ammoniæ aromaticus....466
Report on the action of McAndrew & Son's scammony....274
Report of the Library Committee of the Philadelphia College of Pharmacy 289
Rye whiskey....572
Report on home adulterations, by Chas. T. Carney, &c....502
Report of the specimens exhibited at the Boston meeting of the American Pharmaceutical Association....527
Researches on the essential oil of valerian....414
Revision of the U. S. Pharmacopœia for 1860....190
Rhubarb stalks, on the acids in....193
Rittenhouse, Henry N., on chlorinated lunar caustic....477
Robiquet, M., on soluble pyrophosphate of iron....248
Rochelle salt, on the preparation of....256
Roman chamomile....416
Rose, H., on the behaviour of boracic to tartaric acid....241
Roses, preservation of, for distillation....258
Roussin, M., on a test for the purity of chloroform....148
Roux, M., on the preparation of opium in France....564
Rumicin....152
Russia, history of pharmacy in....165

Samdera indica....342
Samderin....342
Saltpetre in hyoscyamus....402
Saponification of fats by chloride of zinc....431
Sarsaparilla, therapeutic properties of....568
Scammony, on the constitution of....574
Scammony, Mc. Andrews & Son's....274
Scammony resin, nature of....377
Schutzenberger, P.,....133
Seeger, Roland, on hydrargyri iodidum....203
Sepometer, Dr. Smith's....182
Sharswood, William, on the preparation of metallic cobalt....433

Saint Louis Pharmaceutical Association....485
Silk worms, new....185
Smith, Dr. J. Lawrence, on chlorinated lunar caustic....238
" " " on the manufacture of ottar of roses at Kisanlik....324
" " " on hypophosphite of quinia....285
Smith, Dr. Angus, on the organic matter of the atmosphere....444
Solubility of strychnia.... 24
Solubility of medicinal principles in alcohol.... 22
Solubility of sesqui-oxide of chromium, by aid of galvanism....128
Solubility of some alkaloid in chloroform....232
Solubility of phosphate of iron, note on the....128
Soluble pyro-phosphate of iron....248
Soluble citrate of magnesia....407
Spacowsky, Mr., on a new densimeter....135
Spirgatis, Dr. H., on the nature of scammony and turpeth resins....377
Spiritus ammoniæ aromaticus....466
Squibb, Dr. E. R. on the revision of the U. S. Pharmacopœia....49, 186
Squire, P., on weights and measures....369
Statistics of oil of peppermint.... 41
Stearns, F., report on the plants of Michigan.... 28
" " on the peppermint plantations of Michigan.... 33
Stein, Prof., on testing for iodine in nitric acid, &c....170
Steam apparatus for pharmaceutical purposes....223
Stevenson, Mr., on infusions....376
Stevens, Dr. W. H., on the ginseng excitement....480
Suppositories, new mode of making....231
Strychnia, citrate of iron and....23, 127
Strychnia, solubility of in water and alcohol.... 24
Strychnia, investigation of....133
Sulphates, prepartion of pure.... 64
Sulphate of baryta, preparation of....457
Sulphuretted hydrogen in tobacco smoke.... 76
Sulphurous acid, new process for making....353
Sulphuric acid, preparation of anhydrous....439
Syrup of ipecac....143
Syrup of iodide of iron....559
Syrup of tar....555
Syrups, new method of making....549

Tannin, its quantitative determination....427
Tartromel of iodide of iron.... 64
Taylor, Alfred B., on elixir cinchonæ.... 18
Test for the purity of chloroform....148
Thayer, Henry, M. D., on the preservation of fluid extracts....216
Thann, Carl von, on rumicin....152
Therapeutical applications of protein....402
Thompson, William S., on bitter wine of iron....450
" " " on ferrated tincture of bark....147

Therapeutic properties of sarsaparilla.....568
Tickbourne, C. R., on spiritus ammoniæ aromaticus.....466
Tilden & Co., and the Medical Journals..... 86
Tilyard, Charles, on fluid ext. of yarrow.....437
" " on glycerole of lead.....442
Timber, preservation of.....174
Tin, distilled waters contaminated with.....254
Tincture of bark ferrated.....147
Tincture of myrrh.....410
Tomatoes, on the acid of.....196
Tooth paste.....478
Trapp, Julius, on the volatile oil of the seeds cicuta virosa.....251
Turpeth resin, nature of.....377

Ulmus fulva, obtained in Michigan..... 32
Urea, a direct source of nitrogen to plants.....157
Urine, detection of iodine in.....350
Use of funnels in displacement.....327

Valerian, fluid extract of.....379
Valerianate of atropia crystallized.....150
Valerianate of iron, adulterations of.....482
Vanillin, the odorous principle of vanilla.....130
Varieties.....82, 174, 279, 478, 579
Vermifuge, biscuits.....414
Vermifuge properties of Ailanthus glandulosa.....229
Vielguth & Nentwich, on the most correct method of preparing extracts.....233
Vinum ergotæ.....410
Vivianite.....482
Vogel, Jr. A. & C. Reschauer, on sulphuretted hydrogen and hydrocyanic acid in tobacco smoke..... 76
" " " " on the evaporation of water under an oil liquid 372
Voltaic narcotism.....480
Volatile oil of the seeds of Cicuta virosa.....251

Walz, G. T., analysis of Bryonia alba.....249
" " on some principles of Convallaria majalis.....577
" " on colocynth.....331
" " on Gratiola officinalis.....340
Warner, William R., on wild cherry pastilles..... 22
Water of crystallization of quinia.....567
Wax, determination of tallow and stearic acid in.....417
Wax, note on Japanese.....561
Wayne, Edward S., on mannite from Leptandra virginica.....557
Weights, new German system of.....207
Weights and measures proposed for the British Pharmacopœia.....369
Weight of drops.....441
Wild cherry leaves.....423

Wild cherry pastilles..... 22
Wine of iron bitters.....450
Wittstein, Dr. G. C., on the prevention of concussions in boiling.....348
Wurtz, Prof. Henry, on the preparation of pure sulphates..... 67

Yellow coloring matter of the autumnal leaves.....352
Yew tree, poisonous effects of the leaves of the.....479
Yarrow, fluid ext. of.....437

Zimmerman, John, remarks on Catawba brandy.....363
Zinc, oxide of.....435
Zinci chloridum..... 60